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A GUIDE TO POLLUTION PREVENTION FOR MUNICIPALITIES



Comprehensive Municipal
Pollution Prevention Project

Prepared by the Regional Municipality of Hamilton-Wentworth

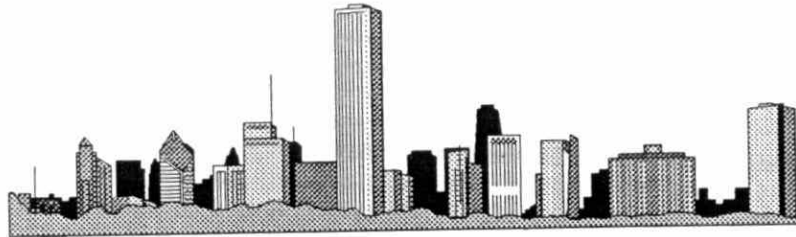
December 1996

Project Partners:
Environment Canada
Ministry of Environment and Energy

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POLLUTION PREVENTION -- P2

A way of thinking and acting that includes environment
in business decisions....



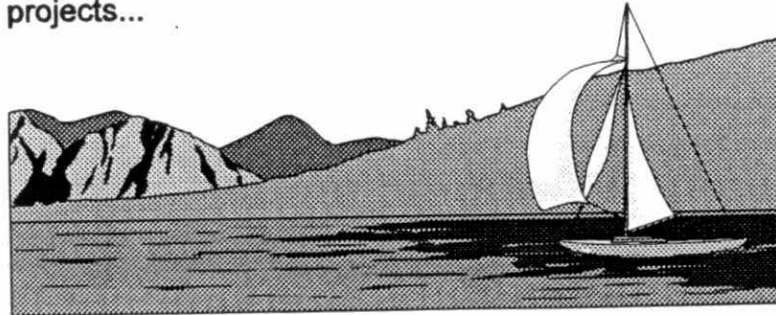
A reduction in costs and an increase in staff
productivity...



A way of stopping environmental problems before they
start...



A vehicle for successful front-line local government
projects...



A tool for today that will help us reach tomorrow.

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To the Reader:



Comprehensive Municipal Pollution Prevention Project

The Comprehensive Municipal Pollution Prevention (CMPP) Project was initiated in 1993 and is a joint initiative of the Regional Municipality of Hamilton-Wentworth,

Environment Canada, and the Ontario Ministry of Environment and Energy. The project is the first of its kind in Canada and was established to demonstrate how pollution prevention could be incorporated into municipal government operations and programs.

The goals of the project were to:

- ♦ look at the Region's internal operations to ensure that its own house was in order;
- ♦ encourage local residents, communities and businesses to practise pollution prevention, through leadership and the Region's ability to regulate and influence certain activities; and
- ♦ share results with other communities.

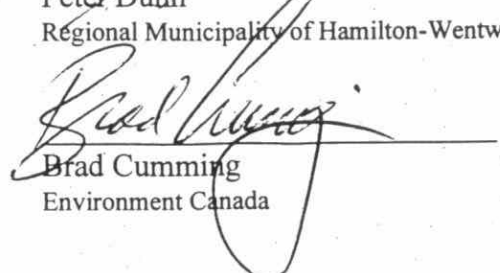
The CMPP Project has successfully demonstrated that there are many pollution prevention opportunities that can be implemented at the local government level. This document provides examples of some of the Region's successes and outlines a planning and implementation strategy that can be used as a guide by other municipalities and agencies.


The Project is helping to meet the goals of the Region's internationally recognized Sustainable Community Initiative - Vision 2020. Vision 2020 describes the type of community that Hamilton-Wentworth residents want in the future. This Vision adopts the philosophy of sustainable development: meeting the needs of today without compromising the needs of the future. Making pollution prevention a primary strategy for environmental protection will help to achieve the vision that balances economic, social, and environmental goals of the community. The Region has been designated as a Model Community under the United Nations Local Agenda 21 Model Community Program for its progress in this area.

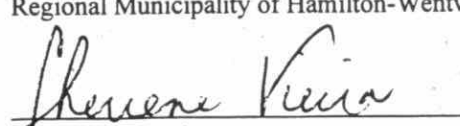
We hope that you find this Guide helpful in incorporating pollution prevention into your organization.

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A GUIDE TO POLLUTION PREVENTION FOR MUNICIPALITIES

TABLE OF CONTENTS

INTRODUCTION	1
BACKGROUND	2
POLLUTION PREVENTION DEFINED	3
WHY P ² FOR YOUR MUNICIPALITY?	4
HOW P ² FITS IN YOUR MUNICIPALITY	7
Table A: "Internal" or In-House Opportunities	8
Table B: "External" or Program/Service Opportunities	9
POLLUTION PREVENTION PLANNING - AN OVERVIEW	10
STEP 1 - GETTING STARTED	11
Leadership	11
Support & Approvals	12
Building the Team	13
Developing the Organization	17
Defining the Game Plan	19
Getting the Word Out	19
Getting the Word Out -- Training	21
Environmental Policy	22
STEP 2 - TAKING INVENTORY	23
The Inventory Team	25
Getting the Information	25
Techniques	26
Importance of Producing Results Early in the Project	28
What to Look For	28
STEP 3 - IDENTIFYING P ² OPPORTUNITIES	31
STEP 4 - TURNING YOUR PLAN INTO ACTION	32
Developing Your Plan	32
Set Goals & Objectives	33
Selection Criteria	34
Implementation	35

STEP 5 - MONITORING AND EVALUATION	37
LOOKING BACK -- LESSONS LEARNED IN HAMILTON WENTWORTH	40
CONCLUSIONS	42

APPENDICES

APPENDIX A -	RESOURCES
APPENDIX B -	CMPP PROJECT DOCUMENT LIST
APPENDIX C -	POLLUTION PREVENTION EXAMPLES & CASE STUDIES
APPENDIX D -	ENVIRONMENTAL SERVICES DEPARTMENT P ² ACTION PLAN
APPENDIX E -	<i>SOURCES</i> NEWSLETTER

INTRODUCTION

The new economic reality for local governments is changing the way municipalities do business. In a time of decreasing funding and downsizing, municipalities cannot continue to react on an ad-hoc basis to environmental and social problems in their communities. Attention is being turned to other ways to plan for a more sustainable community and take actions that will prevent problems from occurring in the first place. This guide looks at how pollution prevention can be used to transform traditional thinking about waste and the environment as being separate from the rest of the municipality's business.

Pollution prevention planning can be a valuable tool for municipal government to proactively address the environmental aspects of its business from two perspectives:

- Internally** - Making sure its own house is in order with respect to operations and activities inside the organization.
- Externally** - Encouraging residents, businesses, institutions, suppliers, contractors and other municipalities to practice pollution prevention through programs, services, and policy.

Participation at all levels is considered to be critical to success. The change starts by "walking the talk" inside the operations and then looking at ways to influence others both internally and externally. This transformation takes time.

Depending on the culture of the municipality, pollution prevention (P²) may not be a quick fix but it is the most sustainable. The key to successfully introducing P² is: think big -- start small. With one successful project to demonstrate the many benefits of P², you will be able to build on that success until P² simply becomes the way your local government does business.

This guide will serve as a practical "how to" reference for starting or building on pollution prevention initiatives in a municipality using a five (5) step planning process. An overview of the planning process is given on page 10 and the steps are described in more detail starting on page 11. The guide was developed based on the experiences of the Regional Municipality of Hamilton-Wentworth (Region) in developing and implementing its Comprehensive Municipal Pollution Prevention (CMPP) Project.



Throughout the document look for this symbol to find examples from the Region's CMPP Project.

Although every municipality is unique, municipalities have many common environmental challenges, and therefore, can benefit by the experiences of others. Lessons Learned in Hamilton-Wentworth are outlined starting on page 40. The Guide concludes with Appendices A through E that provide information on additional resources, other available Project documents, P² opportunities, a sample action plan and employee newsletter.

BACKGROUND

The Region of Hamilton-Wentworth embarked on the CMPP Project in 1993 when it realized that a balance between reactive and proactive environmental solutions was needed. It needed to address financing for expensive capital and operational issues such as the clean-up of Hamilton Harbour, industrial wastewater regulations, solid waste management, and construction of combined sewer overflow tanks.

The project took approximately 2.5 years and the ongoing implementation process continues in the Region. An implementation strategy was developed and tested within the Environmental Services Department of the Region. This was a logical fit because of the Department's diverse municipal activities and environmental responsibilities. A complex mixture of functions results from this Department providing services to both internal and external customers. These activities range from internal services such as the administration of the Region's management functions, fleet management and the laboratory to external programs and services such as by-law enforcement, public education programs, field operations, solid waste management, water and wastewater treatment.

The CMPP Project served as an awareness and education experience for all the Regional departments and has helped to fulfil the Region's sustainable community mandate. More departments are now applying the process. The Region is now pursuing the development of an Environmental Management System which incorporates pollution prevention, as the next logical step.

Municipal Profile: The Regional Municipality of Hamilton-Wentworth

Upper Tier Municipality comprised of:

Towns of *Ancaster*, *Dundas* and *Flamborough*, the Cities of *Hamilton* and *Stoney Creek* and the Township of *Glanbrook*

Population: 460,000

Location: Southern Ontario at the western corner of Lake Ontario

Land Area: 1,120 square kilometres

Council: 28 members

Operating Budget: Approximately \$475 million annually

Administration: Six main business units, approximately 3,000 employees

Regional Services: Health Department, Community Services, Police, Public Transit, Main Roads, Water Supply, Sewage Treatment, Waste Disposal and Recycling, Planning, Economic Development, and Libraries

POLLUTION PREVENTION DEFINED

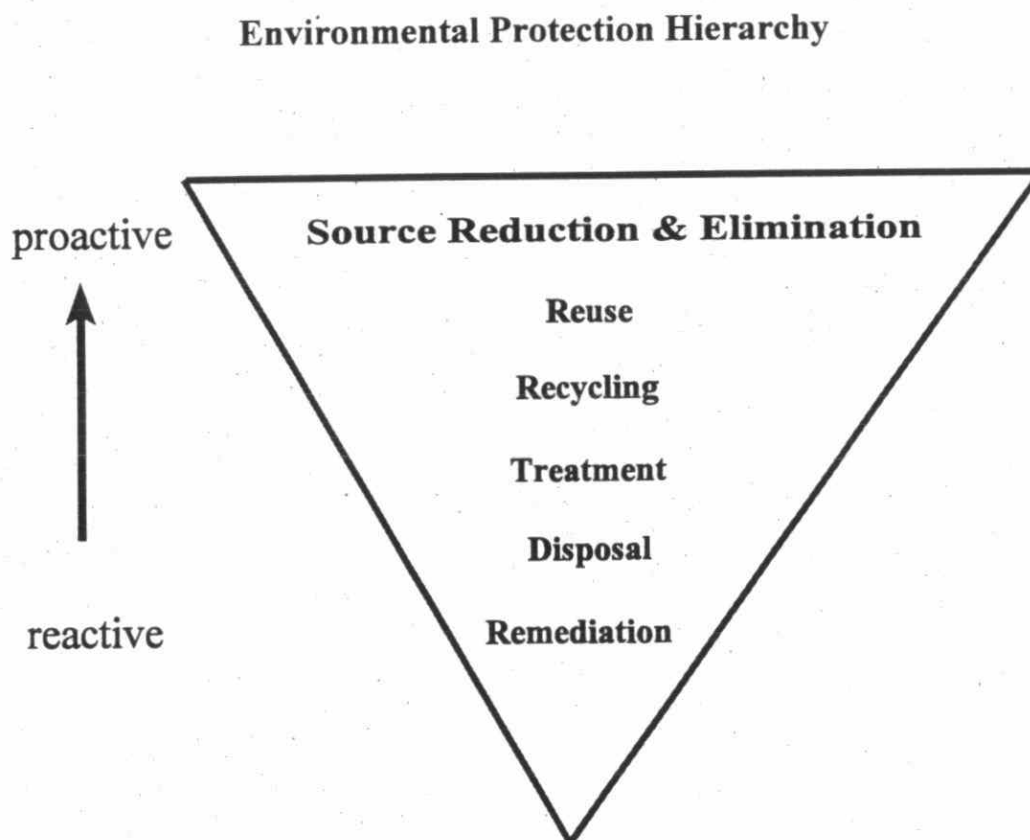
Pollution Prevention (P^2) can be simply described as actions that reduce or eliminate waste at the source.

Source reduction and elimination means evaluating how waste or pollution was created in the first place and determining if:

- waste or pollution can be eliminated; or,
- resources can be used differently or more efficiently.

P^2 =
pollution
prevention

P^2 is a proactive component of an environmental management approach as shown below in the Environmental Protection Hierarchy.



The Hierarchy provides options and a prioritization mechanism to achieve solutions to environmental protection.

P² in Practice

Actions can include:

- setting new or revising priorities
- training and education
- policy development
- process implementation
- operating methods
- purchasing procedures
- technology development & application
- continuous improvement
- influencing organizational culture

Waste can take the form of:

- solid waste
- water contaminants
- energy
- air pollution
- hazardous waste
- noise
- staff time

Who's involved:

- councillors, management, front-line staff
- the community -- residents, institutions, businesses

You will be changing the way your municipality and its stakeholders think and act about protecting the environment. P² is part of a holistic approach to providing the full range of services. P² is a journey and not a destination: an active process, that continually repeats itself, improving each time.

WHY P² FOR YOUR MUNICIPALITY?

Municipalities can achieve the same benefits as leading private sector companies by implementing P² programs. Adopting P² is an effective and responsible business decision that improves the way a corporation delivers goods or services to its customers. In this case the corporation is the municipality, its customers are the taxpayers and the goods and services are water, roads, police, bus service, social assistance, waste management services and so on.

P² Benefits

Put simply, P² could completely change the type and amount of services your municipality delivers. If the public transit system buys natural gas powered buses instead of diesel powered ones it can reduce per mile operating costs by about 50% and significantly reduce air emissions. For example, sulphur dioxide emissions are reduced by 99%. The municipality benefits from the reduced costs and improved air quality.

If P² is so great, why isn't everyone doing it? There are a number of misperceptions that prevent businesses and municipalities alike from looking at pollution prevention. Comments you will hear include: it's too expensive, it takes too much time, or we've always done it this way. The common perception is to view the environment as an add-on or luxury, to be accounted for only if profits or surplus funds permit, rather than as a resource.

Why P²?

The reasons for incorporating pollution prevention into a municipality's programs will be different for everyone depending on the local circumstances. Here are some common benefits and reasons. Some or all might apply.

Benefits

Reasons

Environmental

Combining environmental issues with business decisions is a proactive approach to environmental protection.

Fiscal

Costs are reduced through efficient use of resources.

Reduced Risk and Liability

Changing to products which are less harmful to the environment reduces risk to workers and the environment.

Improved Corporate Image

Relations with stakeholders and staff are improved.

Impact on Other Sectors

Ability to influence businesses, suppliers, and the community to adopt P².

Benefits of P² Defined

Environmental Benefits

The P² approach of changing processes, practices or products to stop environmental problems before they start is simply a better way to protect the environment. This results in an improved environmental quality of life. Some examples of environmental benefits of P² are described below.



Paper used for computerized invoices prepared by the Infrastructure Maintenance Section of the Regional Environment Department was reduced by 75%. This reduction occurred when Information Systems redesigned the form from four pages to a single sheet of paper.



The Regional Laboratory reduced the amount of solvent used for oil and grease tests by recovering and reusing the solvent. This practice also eliminated the release of solvent into the air.

Fiscal Benefits

Optimization results in better use of and often less resources. Environmental problems are usually expensive to fix after the fact. Savings in remedial services costs can be applied to other budget priorities.

Costs can be saved through:

- reduced waste management and disposal costs;
- planning and reviews to understand core activities and root causes of problem areas;
- coordination of resources and activities within and between departments;
- building on work already carried out through existing programs, such as sustainable community plans, remedial action plans, and environmental management systems;
- empowerment of staff resulting in improved morale and productivity.

Even simple measures can result in cost savings as illustrated in the following example.



The Hamilton Street Railway is saving \$2,100 per year by using rolls of cloth towels in the washrooms of the administrative offices. Paper towel use was reduced by 40%.

Reduced Risk and Liability

Using products and processes which are less harmful to the environment reduce employee health and safety concerns as well as disposal requirements. Sound environmental management practices decrease the risk of violating regulations and potential for spills or accidents as shown in the following example.



The Regional Laboratory's chemical inventory control system has reduced chemical purchases. The system also ensures Material Safety Data Sheets (MSDS) are regularly updated and old materials are properly disposed of as soon as they become unusable.

Corporate Image Benefits

The municipality's image and relations with all its stakeholders can be enhanced by its actions. Some of the ways a municipality can benefit include:

- Increased credibility with the community. Leading by example will increase credibility and buy-in when asking others to take pollution prevention measures;
- Improved municipal culture by generating pride for accomplishments. In the P² approach, staff review and rethink the services or products delivered with a view to improvement; and,
- Economic Development. Business will be attracted to a community that recognizes through its by-laws, plans and programs that environmental improvement and economic renewal complement each other.

The following example shows how a positive corporate image can benefit a municipality.



The reputation of the Region's P² program for local businesses is enhanced by being able to show that the Region has successfully implemented P² measures in its own operations and programs.

Impact on other Sectors

Using both voluntary and mandatory approaches, the municipality can influence other sectors of community to implement P². This can include other agencies, institutions, businesses, suppliers, and residents. Voluntary efforts may involve incorporating P² into education and awareness programs. Mandatory requirements for P² can be included in municipal by-laws or tender specifications for the purchase of goods or services. The following is an example of a mandatory requirement in a service contract.



The Region's contracts for the operation of its waste management facilities and recycling program include a requirement for the contractors to develop a pollution prevention plan and conduct annual pollution prevention audits.

HOW P² FITS IN YOUR MUNICIPALITY

A quick overview of common municipal pollution opportunities are presented on pages 8 and 9: organization.

Table A: "Internal" or In-House Opportunities (page 8) – Various municipal activities are listed. Check marks indicate areas of environmental impact that are most significant for each activity.

Table B: "External" or Program/Service Opportunities (page 9) – Typical municipal programs/services and stakeholders that can be influenced by incorporating P² into these programs.

Use these tables as a quick check to compare your municipal activities and programs and find opportunities for your organization.

How P² Fits in Hamilton-Wentworth

The Region has a sustainable community framework which facilitated incorporation of P². Vision 2020, its sustainable community plan, requires economic, environmental and social components to be equally integrated in the planning and delivery of municipal programs. Its progressive Council demonstrated political leadership in seeking to become an Agenda 21 Model Community. The Region uses these mechanisms to address the mix and complexity of issues. These elements were key in developing the CMPP Project.



Table A - "In-House" Pollution Prevention Opportunities

Municipal Activity	Environmental Impact Area					
	Policy & Procedures	Hazardous Waste	Solid Waste	Water & Wastewater	Energy	Air Emissions
Offices (Administrative)	✓	✓	✓		✓	
Roadway Construction	✓	✓	✓	✓		✓
Fleet Management (transit, police, roads)	✓	✓	✓	✓	✓	✓
Facilities & Grounds Management	✓	✓	✓	✓	✓	✓
Laboratories	✓	✓	✓	✓	✓	✓
Driving Practices		✓	✓		✓	✓
Water & Wastewater Treatment Plants	✓				✓	
Solid Waste Management	✓				✓	✓
Recycling Programs	✓				✓	✓
Long Term Care Facilities	✓	✓	✓	✓	✓	
Storm Water Management				✓		
Meetings & Workshops	✓		✓			

Table B - Pollution Prevention Opportunities in Municipal Programs & Services

Program Area	Influence on:		
	Residents	Businesses	Schools, Institutions and other Municipalities
Water Utility	✓	✓	✓
Solid Waste Reduction	✓	✓	✓
Public Health Inspections		✓	
Sewer Use Control	✓	✓	✓
Public Transit	✓		
Economic Development		✓	
Planning (Land Use Policy, Land Development Process, Policy Formulation)	✓	✓	✓

POLLUTION PREVENTION PLANNING - An Overview

There are many planning approaches available, based on the principle of continuous improvement, that municipalities can tailor to suit specific needs. The process depicted on this page was used for the CMPP Project. It was adapted from total quality management and environmental management system models.

Step 1 Getting Started

- identify funding sources.
- get support from Council & management.
- assemble team & resources.
- draft a flexible plan.
- set an environmental policy.
- begin informing the players.

Step 2 Taking Inventory

- current status of environmental impacts.
- develop strategy to collect information.
- complete inventory of selected areas.

Step 3 Identifying P2 Opportunities

- set goals, objectives & priority areas using inventory information.
- identify possible P2 options.
- screen & evaluate options.

Step 5 Monitoring & Evaluation

- keep track of progress.
- communicate results.
- evaluate performance and repeat the process.

Step 4 Turning Your Plan into Action

- select opportunities for implementation with targets and time lines.
- assign responsibilities.
- document plan & get approvals.
- train, educate & motivate staff.
- TAKE ACTION!

STEP 1

GETTING STARTED

There are some important aspects to consider when developing a pollution prevention plan. This section will help you address your concerns over the challenge you face.

- ☐ Leadership
- ☐ Support & Approvals
- ☐ Building the Team
- ☐ Developing the Organization
- ☐ Defining the Game Plan
- ☐ Getting the Word Out
- ☐ Setting an Environmental Policy

Getting Started - Leadership

Before starting your P² planning project, stop and take an inventory of the people key to your success. Also consider whether the key players influence internal or external aspects of the project. Without buy-in and commitment from your local elected officials, senior management, and other decision makers you will face barriers.

To succeed inside the organization, P² must become an integral part of your corporate culture. This will begin through a "champion" or leader at a Senior staff level. A "Champion" is essential to advocate and promote the development of a P² plan to other senior staff and elected officials.

When incorporating P² into external programs you will want to involve community leaders from outside your organization.

✓ Check List

These people will be key to the P² planning project:

Inside the Municipality

- ☐ Mayor
- ☐ Regional Chairperson
- ☐ Councillors
- ☐ City Manager
- ☐ Commissioner(s)
- ☐ Directors
- ☐ Others (specify) _____

- ☐ Board Chair
- ☐ Board, Trustees
- ☐ Chief Administrative Officer
- ☐ CEO, Administrator
- ☐ Department Heads
- ☐ Managers
- ☐ The Already Converted (specify) _____

Community Stakeholders

- ☐ Business Leaders
- ☐ Local Associations
- ☐ Schools

- ☐ Environmental Groups
- ☐ Community Organizations
- ☐ Others (specify) _____

Getting Started -- Support & Approvals

Funding Sources

The financial and staffing requirements will need to be identified, on at least a preliminary basis, in order to get support and approval to embark on a P² project. In most cases, municipalities will have to consider how existing funds or resources can be reallocated to accomplish the proposed project. The availability of resources will dictate the scope of the P² project and the speed at which it is implemented. Outside sources may also be explored and are discussed in more detail on page 16.



Alternative Approach to By-Law Compliance

In 1994, the Region began using pollution prevention to get companies to comply with its sewer use by-law. This was accomplished by reallocating an individual who was responsible for by-law enforcement to P². The main target is small-to-medium sized business and there are over 6,000 companies in the Region that fall in this classification. The education and outreach approach results in contact with more businesses than could otherwise be achieved through traditional sewer sampling that is used for larger industry. A further problem is that many smaller establishments do not have sampling locations which means that the by-law is difficult to enforce. An example of this would be in malls.

Results are achieved through site visits to make pollution prevention suggestions, meetings with business associations, the *Green Pages*® environmental management directory, information brochures and fact sheets, the Citizen's Guide, telephone calls, letters, and workshops. A budget of \$15,000 per year was approved for these activities.

Getting Started -- Support & Approvals

The process of enlisting support and approvals for a P² project will depend on the corporate culture and dynamics of your local government. Whether the process is initiated by Council or staff, the objective is to have involvement and acceptance of all those affected by a P² initiative(s). Since P² can include both day to day operations and policy matters, everyone in the municipality has a role in the process - from Council through to front line staff. Council, as the main decision making body in the municipality, must give approval to embark on the project and give ongoing support to maintain P² as a priority.



Support & Approvals for the CMPP Project

A Project Proposal was first prepared to secure approval of Senior management and funding from the Federal and Provincial partners. Staff proposed that the Region fund its contribution to the Project by redirecting funds from its waste management budget that were originally intended for a waste management master plan. When funding arrangements had been finalized, the CMPP Project was submitted to Regional Council and approved in September 1993. A more detailed Project Outline and responsibilities of the Region, Federal and Provincial governments were then negotiated into a Memorandum of Understanding (MOU). See Appendix B to find out how obtain a copy of the MOU and Project Outline.

Getting Started -- Support & Approvals

You will need examples of P² programs and benefits to convince others to change their thinking and behaviour. Prepare your case for P² by developing a list of examples of P² successes, and possible areas of P² application in your community. If an obvious parallel exists, highlight it in your presentation.

Some pollution prevention examples and case studies, developed for the CMPP Project, are outlined in Appendix C.

P² Success Stories

- The Regional Municipality of Hamilton-Wentworth purchased 6,000 backyard composters that came without packaging, and contained 50% recycled material -- by specifying those conditions in the tender.
- City of Thunder Bay staff came up with over 350 ideas -- a potential savings of \$135,000.00 -- in a suggestion program to conserve electricity.
- The City of Waterloo reduced turf area sprayed with pesticides -- from 72% in 1979 to 2% in 1993, even though the City's green space increased by 150% during the same period -- through its "Plant Health Care Program".

Getting Started -- Building the Team

The Coordinator

The success of P² depends on participation: everyone is responsible for implementing P². The P² Team is the driving force behind the program. It is also important to assign one person as coordinator of the P² project to act as a focal point for all activities.

There are two methods of selecting and appointing a coordinator:

1. Selection from Above

The coordinator may be appointed by Senior staff, based on qualifications and suitability. This has the benefit of expediency, but it may not encourage participation.

2. Selection from Volunteers

P² buy-in by staff can start before the program even begins if Senior staff solicit volunteers. Those not chosen for the position can form the core group from which the team and specific action groups can be drawn.

Getting Started -- Building the Team

The Coordinator's Job Description:

Duties

- acts as a catalyst
- develops the project tasks and work program
- coordinates project resources, ie. budgets, staff, teams, partners, etc.
- serves as the key contact for project communications
- meets regularly with Department representatives and P² project participants
- liaises with senior management and Regional politicians
- liaises with external group and the media

Qualifications

- A strong commitment to the environment and the principles of P² and open to change
- Experience with environmental management systems and continuous improvement
- An ability to communicate well at all levels of the organization
- Experience with education and training
- Business and Industrial sector experience
- A general familiarity with how all areas of the municipality work

Getting Started -- Building the Team

The Reporting Relationship

To effectively adapt P² to existing structures, the Coordinator and Team need to be able to communicate effectively and rapidly with all levels of the organization. To facilitate this, the Coordinator and Team will need a parallel reporting structure, directly accessing Senior staff.

The Coordinator and Team will ideally report to as senior a manager as possible, such as the Chief Administrative Officer or Municipal Manager. In implementing the P² program, this type of reporting relationship reduces or removes the levels required for approvals and helps to balance priorities. This relationship also becomes a starting point for combining environmental considerations with the other general management responsibilities of the municipality.



The Hamilton-Wentworth Model

In the development of the Comprehensive Municipal Pollution Prevention (CMPP) Project a decision was made to assign a Project Manager from Regional staff and use internal resources wherever possible. This was done so that the knowledge gained in developing the project would remain in the organization, important for reaching the goal of integrating P² into the operations. The Project was also a pioneering initiative and at the time, there was limited expertise in the consulting field.

The Project Manager reported to the Manager of Waste Management in the Regional Environment Department, a position two levels down from the Chief Administrative Officer. This meant that the Project Manager was required to go through two levels of management when working within the Department and three levels within the organization. The reporting relationship also maintained the perception of P² as a waste management issue, rather than a responsibility to be incorporated into all aspects of Municipal or Departmental operations.

Getting Started -- Building the Team

Finding the Team

Team members will also be needed and an important target for membership will be staff who will be involved in P² actions. It is important that staff become involved as early in the process as possible to:

- collect inventory information;
- identify workable opportunities;
- facilitate implementation; and,
- build ownership.

These individuals become champions in their work areas. The team should include individuals who can represent all of the areas that will be involved in P². It is preferable that the members be enthusiastic staff from all levels in order to provide a broad perspective in the plans. These main criteria is that the individuals should have a strong interest in the work and the support and approval of their management. Management support is essential so that the representative can be available for meetings and training, as well as to facilitate the implementation of P² initiatives.

To ensure effective use of staff time, existing committees, such as Health & Safety, may also be approached to take on responsibilities.



Staff Teams

In Hamilton-Wentworth two teams were established for the project. Initially, an interdepartmental group was formed to provide input to the overall activities of the CMPP Project. A team specifically dealing with the Environmental Services Department (ESD) activities was later convened.

For the interdepartmental team, two (2) existing committees were identified as having related mandates and were approached to take on the role of providing input to the project. The group known as the Staff Enviro Team agreed to take on the CMPP Project. In the ESD, a new team was formed as there were no existing committees with similar mandates.

For both groups, volunteers were confirmed or requested through the Department or division head. The request included a terms of reference or format for the group which outlined the principle objectives, tasks and time commitment. Some areas provided names quickly, while others required follow-up calls. Despite encouragement, some areas chose not to participate.

Meeting notes were distributed to both team members and Department/division heads in order to facilitate information sharing about the work being done by the teams. Both Teams continue to meet and work on development and implementation of pollution prevention initiatives.

Getting Started -- Building the Team

Outside Resources

It is possible that your in-house resources may not be available or appropriate for the P² project. For example, staff may not have time available, have other priorities, or have limited experience in pollution prevention, communications, or training.

When outside resources are used staff, involvement and input to their work will still be critical in order to ensure there is comfort with the final product. The CMPP Project used consultants in the following areas:

- supervising staff to conduct pollution prevention assessments;
- reviewing assessment findings and identifying P² opportunities;
- evaluating electronic information systems for data management;
- developing a communications strategy;
- developing training and communication materials; and,
- assisting staff teams developing P² action plans.

Outside resources in your community to consider include:

- **Students.** Co-op and summer programs are often available through local colleges and universities. Students enrolled in environmental studies, sciences, or geography combined with computer and communications experience are well suited to P² Projects.
- **Volunteers.** Locally active environmental organizations, or members of your municipality's environment or waste management group may be able to provide support.
- **Grants.** Check with other government jurisdictions for available student placement and training programs. The Provincial Environmental Youth Corps Program and Jobs Ontario Youth Program provided full funding for seven student positions over two summers for the Hamilton-Wentworth CMPP Project.
- **Partnerships.** Other institutions, organizations and businesses in the community may be willing to establish partnerships to jointly deliver P² initiatives if there are common mandates among the parties. Partners can bring various contributions to the table, such as expertise, financing, or in-kind contributions of donated goods or volunteered time.

Note:

Other opportunities to establish temporary positions to be filled by internal staff can be explored. Consideration must be given to union agreements, time frames for filling vacancies, keeping staff on the project, and guarding against discontinuity of information and loss of expertise when staff leave their position.

Getting Started -- Developing the Organization

P² means changing behaviour. To develop an effective plan to change behaviour, time must be given to assessing the unique culture in your municipality. This exercise will identify strengths that can be built upon and areas that will require closer attention during the development and implementation of P² initiatives.

Plan a round table discussion of the topics below. Invite all team members, the Senior staff to whom the coordinator and team report, and any elected officials who will champion the plan on Council.

Getting Started -- Developing the Organization -- A Round Table Agenda

Aspects of the Corporate Culture to Consider

Municipal Structure:

P² has to function in your work environment.

- How can P² fit with corporate/departmental goals and objectives?
- Is your organization familiar with the team approach?
- Does your organization have a way of nurturing or empowering staff?
- Is there a corporate approach of cooperation between departments or do departments operate independently?
- Are there methods or procedures in place to advance innovation and motivate staff? For example incentive or reward programs to encourage employee suggestions, mentoring, career development positions, etc.
- Are there disincentives? An example to consider is the budget process that uses the "use it or lose it" approach. This means that if a budget is not fully spent it will be reduced the following year, thereby discouraging conservation.

Municipal Staff:

P² draws on the support and interest of all staff. Exploring the organization's culture will help to identify how implementation may be perceived and received.

- What can be learned from innovative programs that were successfully implemented in the past?
- How do staff feel about working in your municipality?
- How has change been received in the past?
- What else is occurring in the organization that may affect employee attitudes and motivation, both positively and negatively? For example: team building, restructuring, job losses or labour actions?

Communications:

P² is a process of constant communication.

- Who are the stakeholders?
- What are the types of communication media and channels and who do they reach?
- Do staff get feedback on what happens with their work, new programs or policies? If so, how?
- What is the ease and speed of information exchange? Is news sent out by e-mail as it happens or do employees read about it in the local news?
- Is there a successful communications model already in place that can be used?
- Is there an inventory of newsletters, committees, reference manuals, and other effective channels?

Getting Started -- Defining the Game Plan

There are 2 key steps to Defining the Game Plan:

The Team and the Senior staff to whom it reports must agree on the process and guidelines that will be used to develop the plan. The process should be simple and allow flexibility to adjust the plan to address new insights as they occur.

Another decision is who will be involved in the first cut of the program. Depending on the size of the organization, availability of resources and the level of risk taking, it may be best to test the waters by implementing a pollution prevention plan in one department.

Remember: think big -- start small -- showcase successes.



CMPP Project Game Plan

A Steering Committee, comprised of the project funding partners, was established to guide the development of the Hamilton-Wentworth project. Detailed work plans, based on the Project Outline, were developed by the Project Manager and approved by the Steering Committee. Plans were regularly reviewed and adjusted as required.

As previously noted a single department, the Environmental Services Department, was initially selected. This decision to select a single department was based on several factors including: the size of the Regional organization (over 3,000 employees), limited resources, and the tendency for Regional departments to operate independently, making it difficult to move forward in all departments at once. The Environmental Services Department was selected in particular because of its diverse work locations, and receptive and knowledgeable staff.

Getting Started -- Getting the Word Out

Communications are an integral part of all stages of the P² planning process. The goals of communications in the P² process are to:

- Get approval;
- Build support;
- Cultivate buy-in;
- Get action; and,
- Affect change in behaviour.

Communications for P² will evolve over the course of the program. The stages of change you can expect are:

- **Sell** -- crafting a message, preparing a presentation and selling the project;
- **Plan** -- setting up two-way communications with staff for feedback and input;
- **Do** -- conducting awareness and information on the W5 (who, what, when, where, why) of what will be happening; and,
- **Review** -- continuing the process of communications with the emphasis on positive reinforcement.

The communications strategy should be developed in conjunction with the other aspects of the plan. The CMPP Project *Final Communications Strategy* (see Appendix B to find out how to obtain this document) describes possible communications techniques for internal and external audiences. To ensure that all groups within the internal and external target audiences are communicated with effectively, a *range* of communications techniques is recommended because:

- some communication mechanisms are more effective than others for reaching certain audiences; and,
- experience shows that combinations of techniques, rather than relying on one or two communications mechanisms, are more likely to ensure that P² is effectively and comprehensively communicated throughout an organization.

Examples of Communication Techniques:

Internal Audiences: Presentations, informal meetings with staff, employee newsletters, fact sheets, information guides, posters, displays, contests, recognition or suggestion programs, displays, screen savers, e-mail messages, training programs, computer based training, information hotline, notices with pay cheques, etc.

External Audiences: pamphlets, trade shows, paid advertising, media/editorial coverage, speakers bureau, internet home page, liaison with organizations, roundtable discussion groups, etc.



Advice from Hamilton-Wentworth Staff on Messaging

Many suggestions were received from Regional staff and Interdepartmental Working Group members about pollution prevention messaging:

- Keep it simple and concise.
- Stress the benefits and positive implications of pollution prevention. Use case studies to highlight success stories.
- Use humour and cartoons to make it interesting and fun.
- Give people *real* examples of what they can do to prevent pollution.
- Provide positive feedback on achievements, no matter how small.
- Keep at it! The communications process will be a continuous, incremental process because moving towards pollution prevention involves change. Persistence will be a key to success.

Getting Started -- Getting the Word Out -- Training

Training Requirements

Given the level of individual action required for P² planning, staff training is critical. The buy-in to a program such as P² is personal. Staff will need information and resources to participate, accept changes, suggest, evaluate, and implement initiatives. Training also demonstrates the municipality's support of the program.

The first priority group for training are team members and other key staff that will be involved in the development of the action plan. They will need training on pollution prevention concepts and planning as soon as possible. A needs assessment and training plan for other staff should be developed as an element of the P² plan.

Competing priorities will dictate the schedule and length of training sessions. You will also need to consider priorities when marketing the training so that staff will be allowed the time to attend sessions during normal work hours. These needs should be researched in conjunction with the development of a training plan.



Training for Hamilton-Wentworth Staff

A training needs assessment revealed that basic knowledge about P² was limited among Regional staff. Most thought P² was or included recycling. They had the belief that P² was a responsibility of waste management staff and, therefore, did not see a need for training. Training was identified as a priority so that staff could participate in the CMPP Project in a meaningful way.

Training materials were developed for the CMPP Project and can be adapted for other municipalities.

The interactive program is based on training being delivered by Regional employees and consists of the following components:

- 1) Train-the-Trainer Program
- 2) Full-Day Session -- for managers, instructors, and implementation staff
- 3) Half-Day Session -- for all employees

An Instructors Manual, Workbooks for the half- and full-day sessions, and a 42 minute video were developed for the delivery of the sessions. *See Appendix B to find out how to obtain copies of these materials.*

Train-the-trainer format was selected to reduce costs and allow expertise to grow within the organization. Trainers are available for participants to call after the training sessions are over. Volunteers were invited and received 3-1/2 days of training on adult education skills and how to deliver the sessions. Several of the volunteers were experienced health and safety trainers.

Getting Started -- Environmental Policy

Setting an Environmental or Pollution Prevention policy early will help set a framework or guiding principles for the development of your P² plan. The policy is best developed with input from staff to increase buy-in. Input can be as wide as feasible and include staff from various levels, politicians, and other stakeholders.

The Policy should be endorsed by the municipal council or senior management. Once approved, it should be publicized through communications techniques such as those described on page 20.

Sample Policy:

The Regional Municipality of Hamilton-Wentworth Corporate Environmental Policy:

We believe that a healthy environment is an essential component of becoming a sustainable community and will strive to be exemplary in our environmental performance. Our commitment is:

- ◆ *To meet and exceed all environmental standards and legal requirements, and the reasonable expectations of Regional taxpayers in the management of Regional operations and services.*
- ◆ *To address environmental implications of all activities, decisions, and expenditures, in concert with economic and social considerations.*
- ◆ *To promote environmental conservation and protection in all our internal operations.*
- ◆ *To encourage all employees to be conscious of environmental considerations and be protective of the environment in their work and personal lives.*
- ◆ *To give highest priority to actions that result in the elimination or reduction of waste at the source (pollution prevention).*
- ◆ *To conduct an annual evaluation of our progress in implementing our environmental goals and policy and report the results at the Annual Sustainable Community Day.*
- ◆ *To re-evaluate and improve approaches as required, based on the annual evaluation of progress.*
- ◆ *To work with the community, area municipalities, businesses, suppliers, contractors, and other partners to encourage environmentally sound practices and activities.*

Approved by Regional Council, April 18, 1995, Report ENV95-047

STEP 2 TAKING INVENTORY

P² Inventory

The purpose of a P² Inventory is to:

- find out what is currently happening in the area of the environment and set targets for the reduction or elimination of pollution;
- identify opportunities to act to reduce or eliminate waste at the source; and,
- establish a reference point or baseline to measure the results of the changes and continuously improve.

During the inventory, areas for action will be identified as opportunities that can be implemented. These opportunities will then be reviewed and evaluated. Changes that are feasible are then implemented.

The scope of the Pollution Prevention Inventory is holistic, looking at all environmental impacts of the way a municipality does business. This means that the inventory should include a number of components in order to achieve optimum results and ensure that a problem is not transferred from one area to another, eg. solid waste is reduced but a liquid waste problem is created. The result will be a database of information that will provide information on how the organization works, use of resources and releases to air, water and land.

Components of a Pollution Prevention Inventory:

- | | |
|---|--|
| <input type="checkbox"/> Mandate & Responsibilities | <input type="checkbox"/> Activities, Programs & Services |
| <input type="checkbox"/> Organizational Structure | <input type="checkbox"/> Policies, Procedures, & By-laws |
| <input type="checkbox"/> Relevant Legislation | <input type="checkbox"/> Existing Environmental Programs & Initiatives |
| <input type="checkbox"/> Solid Wastes | <input type="checkbox"/> Hazardous Materials |
| <input type="checkbox"/> Energy & Water | <input type="checkbox"/> Purchased Goods & Services |
| <input type="checkbox"/> Transportation & Air Emissions | |

When considering the municipality's business, environmental impacts may result from:

- ▶ the way the work is done inside the organization, ie. internally, as a result of you doing your job.
- ▶ how a program or service is delivered, ie. externally, how others impact the environment as a result.

It is recommended that the inventory look initially at the internal aspects of the municipality, unless there is already a significant degree of implementation of source reduction and elimination actions.

The CMPP Project found that staff had difficulty appreciating how pollution prevention could be integrated into programs and policies without having practiced it themselves. Evolution to addressing policy and program areas was a natural progression as knowledge and experience increased.

For a complete picture of municipal activities, inventory information will be required at different levels. Consider activities, programs, practices, policies, etc. that:

- affect all municipal operations;
- are department specific;
- are work location specific; or,
- are specific to a program or process.

Taking Inventory -- The Inventory Team

Staff and support resources must be assigned to conduct the inventory. The staff in the work location will be responsible for implementing any changes that are identified through the inventory, therefore it is important that time is budgeted for this activity.

A team of staff, such as the environmental committee, can be assembled to conduct the inventory. If staff are not available, options such as summer students or outside consultants can be considered.

Ensuring that staff have or receive appropriate training to conduct the inventory is essential to ensure that information and data is collected correctly and consistently.

At a minimum, a contact person from each operation in the facility being examined should be designated to ensure that the appropriate information is being collected and there is a full understanding of the activities in that area. Wherever possible, the contact person should assist the inventory team, so that this individual has first hand knowledge of the findings.

Taking Inventory -- Getting the Information

There are numerous reference books on gathering environmental data. As part of the Hamilton-Wentworth P² Project, a series of guides were developed to prepare and conduct a pollution prevention inventory including techniques and tools for obtaining information about current practices. See Appendix B to find out how to obtain these Guides. Other useful references are listed in Appendix A - Resources: Further Reading.

A common element among the Guides is the use of standard questions to ensure that information is gathered in a consistent manner. This ensures the integrity of the inventory and allows for future monitoring and reference. Questionnaires or forms are a convenient way to collect the information. Several were developed for use in the CMPP Project and are included in the various Guides.

Qualitative & Quantitative Needs

Both qualitative and quantitative data are needed to ensure that the most significant pollution prevention opportunities are identified, recommended, and if possible implemented.

- Qualitative data can help one to understand how things work. For example: What are the policies, procedures, and the actual workplace practices? How does the equipment work and how is it operated? How are the building systems like heating and ventilation operated and maintained?
- Quantitative data places a number, percent or dollar sign to an activity or object to compare what is being done, to what could be done.

Be sure to collect information about what is already being done - these successes can serve as valuable examples to spur action on other progressive work.

Taking Inventory -- A Word on Terminology

The "A" Word

Inventory can also be called "assessment" or "audit". These words may mean different things to different people and their interpretation of what will be occurring can affect the quality or accuracy of the information that is obtained. It is important to assure staff involved in the inventory that the information will be used to make positive changes and that staff will not be adversely impacted. Be cautious about terminology in order to achieve maximum results.

Taking Inventory -- Techniques

Techniques

Opportunities may be developed based on the inventory information regarding:

facility operations	management and personnel practices
cost accounting practices	material handling and inventory practices
policies and by-laws	service and program delivery

Information Sources:

- Existing Information Sources -- Before collecting any new data, first determine if there are existing studies, inventories, lists, etc. Don't reinvent the wheel. Example: Material Safety Data Sheets (MSDS) are readily available and a good starting point for an inventory of hazardous materials.
- Review policy, procedure, and operating manuals if in existence.
- Talk with staff -- Ask staff to describe how things work in their area. There may be differences between operating procedures and actual workplace operations. Invite their ideas on how to save resources.
- Walk through facilities -- Observe human and physical operations of the workplace. Example: Are lights on in a deserted change room? What are the housekeeping practices like? Are there recycling bins contaminated with garbage? Is the building well maintained or are there leaking taps and dirty ventilation pipes?
- Measure -- Sample and weigh garbage generated, measure the water flow rate of taps, collect samples of materials that have potential to be reduced or eliminated, take inventory counts.
- Extrapolate Data -- If there are similar activities at several work locations or facilities, it may be possible to save time by using or collecting data from one representative site and extrapolating it to the others. Site visits should be made to locations where data collection will not be done to verify the similarities.
- Review purchasing records to find out significant purchases in terms of volume or cost.
- Visually estimate quantities of waste if there are time constraints, or, to verify similarities when extrapolating data from another area.

Taking Inventory -- Importance of Producing Results Early in the Project

Results Tell and Sell

During the Inventory, take note of changes that can easily be made and encourage immediate action wherever feasible. Demonstrating cost savings, resource conservation and waste reduction can be very exciting and will be a determining factor in keeping staff motivated. The results will also generate early support and interest in the project, increasing cooperation and raising awareness of the pollution prevention issues at hand. Finally, the results will give project leaders a chance to illustrate the accomplishments made early on as justification or reassurance for continuing on the project.

An examination of areas of activity in your municipality will yield an inventory of likely projects for successful completion. Policies, procedures, services and by-laws should be examined. The more difficult ones are better addressed as the project matures. This section is a guide to possibilities for your inventory.

Refer back to Tables A (page 8) and B (page 9) for municipal activities and their most significant environmental impact areas

Taking Inventory - What to Look For

- **Mandate & Responsibilities** -- Examine the Provincial statute(s) that outline the authority and responsibilities of the local municipality. This information will be important to identify key responsibilities and ensure that the municipality has the authority to implement the opportunities. For example, Hamilton-Wentworth's responsibilities are described under the Ontario Municipal Act, Regional Municipalities Act, and the Hamilton-Wentworth Act.
- **Activities, Programs & Services** -- Obtain information on the various programs, products and services that are provided by the municipality or department.
- **Organizational Structure, number of staff and work locations** -- Gathering information about the political and administrative workings of the municipality will serve as a useful reference in identifying decision-making processes and inter-relations of various activities. Obtaining numbers of staff and work location information will also be relevant in planning the logistics of various initiatives.
- **Policies, Procedures, & By-laws** -- Existing policy and procedure instruments can be used to formally integrate P² into municipal operations. A starting point for this information will be the municipal Clerk's department. Manuals, indexes or databases may be available to search for those instruments that may be related to pollution prevention and environmental protection.

Policies & Procedures: Policies generally indicate the department responsible for leading them and these areas can then be consulted for procedure manuals. The purchasing policy and facilities management procedures are two areas that greatly impact resource use.

Municipal By-laws: By-laws that will be of most interest will be those relating to solid waste, sewer use, storm water, water use, and land use planning (Official Plan). Once by-laws of interest have been isolated, talking with staff responsible for their implementation and enforcement will be important, identifying the level of enforcement of the by-law, if there were any concerns staff had about the effectiveness of the by-law, and if there were any intentions of changing the by-law.

Numbers of by-laws can be quite significant. For example, Hamilton-Wentworth had passed approximately 2,520 between January 1973 and February 1994. An initial screening revealed that approximately 50 of these were relevant to P². These 50 were original by-laws and their amendments in the areas noted above.

- **Relevant Legislation** -- Municipalities, in conducting their business, are required to comply with various pieces of Federal and Provincial legislation, some of which are specific to the local area. These may impact the type and way opportunities are implemented and, therefore, need to be identified.
- **Existing Environmental Programs & Initiatives** -- Internal or external programs may already be in existence and should be used as building blocks wherever feasible. Examining mandates and programs may identify areas for partnerships or complementary activities.
- **Solid Wastes** -- An examination of current solid waste management practices, including types and quantities of wastes that are recycled, composted, treated, incinerated or landfilled.
- **Hazardous Materials**-- Review of use and disposal practices of materials with hazardous components. Relevant information will include the hazardous component, quantities used and disposed of, purchase costs, and disposal costs.
- **Energy & Water** -- Utility bills are a starting point to obtain information about quantities and costs of water, electricity, natural gas, etc. consumed. More detailed information about the fixtures, process, or equipment that uses the energy or water will also be necessary. Wastewater information may also be available.
- **Purchased Goods & Services** -- Quantities and costs of goods purchased are excellent indicators of resources used, and may be easier to measure than wastes if tracking systems are in place. Identifying major suppliers of services to a municipality or services which have significant environmental impacts will assist in determining opportunities to influence suppliers to adopt P².
- **Transportation & Air Emissions** -- Municipal vehicles are a major source of air emissions. Assessing the age, types of vehicles, vehicle use, maintenance practices, types of fuels, and fuel costs will be useful. Employee transportation practices, both at work and travel to work, may also be examined. This may include areas such as driving practices, idling policies, car pools, use of bicycles and public transit.

It's Just the Beginning

The Inventory is the beginning of the P² planning process and not the end. Be cautious about the amount of time spent collecting data - it is possible for the process to go on indefinitely! Since P² is a continuous process, it can be implemented without knowing every last detail. Inventory information can be expanded, refined, improved or updated as the process is repeated.



CMPP Project Inventory Phase

The Inventory Phase of the CMPP Project was an extensive undertaking which began with the preparation of a detailed workplan and budget, based on the *Project Outline*. The information gathering process began in March, 1994 and was substantially concluded in November, 1994. From December 1994 to March 1995, outstanding pieces of information were added and the *Inventory Phase Summary Report* prepared. (See Appendix B for information on how to obtain this Report.)

The Inventory Phase was completed using the following dedicated staff resources: a project manager, working on the Project 60% of the time; a full-time project analyst; and three summer students. Other staff assisted with the inventory work as part of their regular activities.

Primarily quantitative information on the Region's authority and responsibilities was initially gathered and included an examination of:

- ☐ Regional by-laws and policies;
- ☐ Regional corporate structure, departmental profiles, policies, and responsibilities under the Hamilton-Wentworth Act;
- ☐ Federal and Provincial legislation impacting on municipal operations; and,
- ☐ Existing environmental initiatives that may have an impact on the Region.

It was recognized that more detailed information about various departments would be necessary to identify P² opportunities. It was more practical, however, to begin in one of the Region's fifteen departments and then transfer the experience to other departments. As previously mentioned the Environmental Services Department was selected to test and develop the pollution prevention inventory process.

Gathering the inventory information from the Environmental Services Department took approximately eight months to complete and used summer students as the primary resource. The Inventory covered activities of approximately 185 staff at eight work locations and included:

- | | |
|---|---|
| <input type="checkbox"/> solid waste | <input type="checkbox"/> hazardous materials |
| <input type="checkbox"/> energy use | <input type="checkbox"/> air emissions & transportation |
| <input type="checkbox"/> water & wastewater | <input type="checkbox"/> use of goods & services (purchasing) |

Wherever feasible, staff were encouraged to implement actions that could be done immediately rather than waiting for a final report on the inventory findings. For example, purchase of business cards for CMPP staff on recycled paper with vegetable based ink resulted in a similar change for all future business cards purchases in the municipality.

STEP 3

IDENTIFYING P² OPPORTUNITIES

During the inventory, numerous opportunities will be identified and inventory information should be reviewed to determine areas of priority and set targets. Tables A (page 8) and B (page 9) are a starting point for priority areas for various municipal activities and programs

Identifying Opportunities

There are several options to look for ways to reduce or eliminate wastes - group brainstorming can be effective, requesting suggestions from staff, walk through tours by the staff team, reviewing examples that have been implemented in other areas. A list of P² examples developed for the CMPP Project is found in Appendix C. You will want to begin building your own library of opportunities that can be accessible to everyone. Every situation is unique so what may work in one area may not be feasible in another. There is no one right answer!

You will benefit from a fresh look at potential opportunities. Assign team members to look for opportunities in areas normally outside their field of activity. Bring those opportunities to the table for discussion with the experts in the field.



Hamilton-Wentworth Project

A consultant was retained to evaluate the Inventory Phase information, identify any gaps and recommend opportunities for the Region and Environmental Services Department (ESD). An extensive list of opportunities was developed (Appendix C noted above) for both internal and external municipal activities. Opportunities for specific ESD work locations were also identified by the consultant and CMPP Project Staff. The consultant recommended that priority be given to opportunities relating to internal or day to day operations of the Environmental Services Department given the limited implementation of source reduction and elimination projects in the Department.

Opportunities relating to internal operations were presented to the ESD P² Team for consideration. The Team consulted with staff in their work areas to solicit additional opportunities through meetings and requests for suggestions.

Regional Laboratory staff had a brainstorming session and came up with a list of 65 pollution prevention ideas. Here are some examples of the opportunities identified:

- ▶ *Composting program for food and paper towel waste*
- ▶ *Replace paper towels with air hand dryers*
- ▶ *Consider reusable and returnable packaging when purchasing chemicals*
- ▶ *Circulate information instead of making individual copies*
- ▶ *Establish a system for reusing file folders and envelopes*
- ▶ *Eliminate fax cover sheets*
- ▶ *Review Laboratory methods for changes that would result in less waste*
- ▶ *Use 1 boiling chip in TKN's instead of 3*
- ▶ *Run cooling water for condenser only when in use*
- ▶ *Don't run dishwasher unless full*
- ▶ *Turn off equipment and lights when not in use*
- ▶ *Car pool*

STEP 4

TURNING YOUR PLAN INTO ACTION

Developing Your Plan

Develop your municipality's plan from two perspectives: first, it is a business decision -- dollars spent on the initiatives are an investment or avoided expenses, and second, partnerships can be developed for specific projects as a way to deliver them as long as common mandates are identified. Possible partners include other levels of government, other municipalities, universities, colleges, private sector, non-profit organizations, etc. Solicit the participation of as many people as possible in the plan development, ideally, contributors and participants will include elected officials, senior staff and front-line staff.

Developing the plan must be an inclusive exercise if it is to succeed. People who participate in development are more likely to participate in implementation. Take the time necessary to ensure that you involve as many people as practical in this stage.

The ideal team to work on development includes:

- Project coordinator
- Staff representatives from areas that will be responsible for implementation
- Senior staff to whom the coordinator reports*
- An interested elected official*

* Senior staff and elected officials may wish to participate by receiving progress reports and updates, but it is essential that you include them in the process.



Environmental Services Department (ESD) P² Plan Development

The ESD Plan was developed by the P² Team, with facilitation from a consultant and support from the CMPP Project Manager and staff. The development began with the consultant providing an overview of the process that is described in this section of the guide: *Turning Your Plan Into Action*. The team first reviewed inventory information and opportunities proposed by the consultant. Departmental management and staff were then consulted.

Turning Your Plan Into Action -- Set Goals & Objectives

Goals & Objectives

Set general goals and objectives based on inventory results. Wherever possible, specific and measurable targets should be set. However this may not always be possible in the early stages, depending on the detail of the inventory information.

Once a list has been developed, a set of evaluation criteria needs to be established and agreed upon to screen opportunities. The following list of questions will assist with the initial screening:

1. Will the opportunity assist in achieving one or more of the pollution prevention objectives?
2. Is the opportunity practical? Can it be easily implemented without disrupting operations?
3. Is the opportunity technically feasible?
4. Is the opportunity cost effective?
5. Do we have the authority to implement the opportunity?
6. Can we implement the opportunity?

Turning Your Plan Into Action -- Selection Criteria

Selection Criteria

Once options have been selected for review, the team must decide which ideas should be implemented and in what order.

Those given priority should focus on the following:

- **Cost benefit** -- opportunities which have no risk or cost or will result in significant cost savings should be implemented immediately;
- **Practicality** and ease of implementation;
- **High visibility** -- options with high profiles will promote P² in the workplace; and,
- **The Waste Management Hierarchy** -- giving priority to options which:
 - reduce or eliminate waste at the source
 - reuse
 - recycle
 - involve treatment and disposal.

More formal approaches can also be developed over time which involve ranking options using set criteria and an evaluation matrix. Issues of pay-back periods and expected returns on investment will also have to be considered. Municipalities sometimes use a pay-back period which coincides with the municipal council term, typically three years. This short time frame may not be realistic for projects with significant capital investments such as energy conservation retrofits.

Depending on the existing level of involvement of staff, it may be better to begin with easier opportunities that can be quickly implemented and will have significant waste reduction or financial savings.



The Regional Laboratory involved all of their staff in rating 65 opportunities that were identified in the initial brainstorming session.

Individuals were asked to rate each idea using the following:

- 0 - Unknown: no opinion, unable to assess
- 1 - Unlikely: difficult to implement (costly, time consuming, marginal benefits)
- 2 - Possibly: probably can be implemented. Requires further evaluation.
- 3 - Certainly: can and should be implemented a.s.a.p.

For each opportunity, the ratings were summarized according to the percentage of staff that rated 0, 1, 2, or 3. The criteria for implementing an opportunity was based on:

Time Frame	Criteria	Number of Opportunities
Implement Now	>80% of staff rate opportunity as a 3, or >60% of staff rate opportunity as a 3, and >20% rate as a 2	29
Evaluate for Short-Term Implementation	>65 % of staff rate as either 2 or 3	25
Evaluate for Long-Term Implementation	40-65% of staff rate as either 2 or 3	6
Unlikely	Did not meet criteria in other 3 areas	5

Turning Your Plan Into Action -- Implementation

Plans are then drafted based on the individual opportunities that are selected according to the:

- goals;
- objectives; and,
- criteria established.

The plan should be documented and specifically indicate:

- media (air, water, land) that will benefit;
- target or objective (how will this be measured);
- start and end dates;
- who will be responsible for implementing or acting, maintaining; and,
- when the plan will be reviewed.

The first cut of the plan will focus on who and how the various opportunities will be implemented. Depending on time frame for reviewing the plan (a minimum of an annual review is recommended) it will not be feasible to complete all of the action required on certain opportunities that are more complex. The plan should then cover one or two tasks of an opportunity such as conducting more detailed research or developing an implementation plan.

Establishing realistic time frames for implementing opportunities should be given careful consideration. The most significant factors are time required for Council approval and the municipal budget process. Action on an opportunity identified after the budget is approved may be delayed for as much as a year.

A formal review of the action plan on an annual basis is recommended as a minimum. This is sufficient time to allow for implementation of the various actions. Informal checks will help to keep plans on target. More frequent reviews may be desirable when activities are starting up.

Plans should be approved and signed off by management or the municipal council as appropriate. Once approved: just do it!



Environmental Services Department (ESD) P² Action Plan

The P² Team determined that general departmental strategy was required, complimented by plans individualized to the various work locations. The general action plan for the Department that resulted can be found in Appendix D.

STEP 5

MONITORING AND EVALUATION

Monitoring and Evaluation -- Criteria

Monitoring and Evaluation Criteria

Measurement of progress is a critical component in evaluating for continuous improvement. In some cases, an overview inventory may be conducted annually, and a more detailed one completed every couple of years. In a sense, monitoring will become an ongoing inventory of environmental activities and used to repeat the process for continuous improvement.

Key indicators can include:

- utility usage and costs;
- water usage and costs;
- quantities of supplies purchased;
- disposal records and costs;
- procedural changes; and,
- number of staff trained.

Indicators must be provided to everyone responsible for implementing the various initiatives so they can evaluate it and make appropriate changes or adjustments.

Assign Responsibilities

It is important to identify:

- who will be responsible for collecting the information;
- who will review it; and,
- where recommendations for improvement will go.

These responsibilities can be assigned in the P² Action Plan. The individual(s) responsible for implementing the opportunity are often in the best position to measure the results, and can do so as it happens. Review of indicators can become an ongoing role of the P² Team. Management, at various levels, will review and approve recommendations for improvement.

Challenges in Monitoring Progress

Looking for ways to easily keep track of information is essential in integrating it into daily activities. Keeping this in mind, a less than perfect indicator is usually better than none at all.

Some changes may be more challenging than others to measure, such as changes in attitude or behaviour. Techniques such as questionnaires and focus groups can be used in these areas.

Monitoring and Evaluation -- Criteria

Information management systems should be developed to keep track of information. Commercially available spreadsheet and database software can accommodate these needs, such as Excel, Lotus, Access, and DBase. An efficient filing system will also be necessary.

Some essential elements for an effective and successful monitoring program include:

- relevant, available or easily obtainable data;
- accurate data;
- regular and consistent data collection;
- available, adequate data collection resources (people & equipment);
- operable electronic information system(s) in place for ease of access to data for larger municipalities; and,
- effective communications tools for results.

Communicating results is an excellent way to maintain enthusiasm and motivate staff. This can be done via newsletters, information notices, e-mail messages and other venues. A sample newsletter from the Hamilton-Wentworth CMPP Project is reproduced as an example in Appendix E.

Monitoring and Evaluation -- Evaluating Results

Evaluating Results

Evaluation of the effectiveness of initiatives in reaching goals and objectives is a critical component of the continuous improvement aspect of implementing pollution prevention.

Effective evaluation should include:

- monitoring results;
- reviewing the effectiveness of the results; and,
- making adjustments for continuous improvement.

The P² Team needs to ask questions at all stages of the evaluation:

Should goals and targets be adjusted?

Should the implementation plan be changed?

Is more training required?

Should a new alternative be sought?

Is there new information available?

How can we improve?

Monitoring and Evaluation -- Maintaining the Program

Maintaining the Program

Everyone will be responsible for implementing pollution prevention, however, it is important to clearly identify roles and responsibilities.

Some techniques that can be used include:

- adding pollution prevention requirements to: job descriptions, workplans or performance appraisals;
- assigning an individual or committee as a focal point for communications;
- incorporating requirements into other procedures; and,
- requesting suggestions from staff and recognizing their contributions.

LOOKING BACK -- LESSONS LEARNED IN HAMILTON WENTWORTH

Lessons Learned -- Support

This entire Guide is based on the lessons learned in Hamilton-Wentworth. There are, however, some points which cannot be stressed enough:

- Senior staff support is essential at all stages;
- support at all levels is critical to success;
- teams need to be set up as early as possible in the process (at start-up); and
- other municipal priorities can delay or prevent progress.

Lessons Learned -- Understanding

Try to understand those who are being asked to change. What are their present beliefs, knowledge, and priorities about the environment? The words and approach that are most easily understood are those that are based on people's existing frame of mind. This may result in greater acceptance and the desired behaviour may stick over the long term.

The best example of this is how individuals assess the problem of environmental protection. It may be from the perspective of the environment, budgetary, planning and so on, depending on their background.

You can try to address as many perspectives on P² as possible by:

- researching priorities;
- assessing knowledge and beliefs about the environment;
- using words that will be understood and interpreted in the desired manner (jargon, buzz words and acronyms can be a barrier to outsiders);
- listing as many opportunities for P² as possible to cover as many areas of interest as possible; and,
- setting priorities for activities to focus attention on easily understood results.

Lessons Learned -- Process

The Hamilton-Wentworth experience provides several lessons about the process of planning and implementing P² in an organization.

- A P² inventory is an essential first step and should be repeated to monitor progress. For the first inventory, collect basic information that can be used to initiate action quickly. More complex areas can be covered in future cycles of the P² planning process.
- Good ideas that are easy to implement should be acted on as soon as they have been found. Completing an inventory or preparing a plan are tools and should not be a barrier to acting.

- Consultants are a resource but can't answer all your questions.
- Continuous improvement and participative management models are well suited to implementing P².
- A traditional bureaucratic organizational structure makes implementing P² more challenging and complex than one that has learned to accommodate continuous improvement and participation by all levels.
- Size makes a difference. Smaller work places or organizations can expect to spend less time to develop and implement a P² plan than larger ones.

Lessons Learned -- Strengths

- A driver of the P² Program was the Sustainable Community concept of Vision 2020, which provided an existing framework to incorporate P². Vision 2020 takes P² from an isolated environmental activity and brings it into the holistic concept of social, economic and environmental planning.
- Using less traditional approaches to make limited resources go as far as possible, eg. forming a partnership with the Federal and Provincial governments, and the introduction of P² as a tool to achieve compliance with the Regional Sewer Use By-law.

Lessons Learned -- Opportunities for Further Development

- expansion of public education and outreach efforts in solid waste to include water, energy, and air issues;
- exploration of P² opportunities for storm water management;
- continuation and expansion of efforts for voluntary P² for sewer use compliance, including the development of best management practices, educational materials, and a recognition program; and,
- dedication of resources to corporate P² to ensure profile and work initiated by the CMPP Project is continued, recognizing potential for cost savings, environmental improvement, and image. Priority areas include energy conservation and addressing resource conservation and waste reduction in Regional purchasing policy and practices.

Along with the opportunities, there is a potential challenge as there is no formal management plan which links pollution prevention with other business aspects of the Region. It is hoped that this will be addressed with the planned implementation of an Environmental Management System (EMS) which will incorporate P².

CONCLUSIONS

There are many P² opportunities for municipalities ranging from daily operations, to new by-laws, organizational structure, policies, and education.

Three challenges for P² communities are:

- 1) accepting the benefits and the fact that it is just sound and responsible business practice
- 2) understanding that it doesn't mean more work
- 3) TAKING ACTION

APPENDIX A - RESOURCES

ENVIRONMENT CANADA	A-1
ONTARIO MINISTRY OF ENVIRONMENT AND ENERGY	A-3
ORGANIZATIONS	A-5
FURTHER READING	A-6

ENVIRONMENT CANADA

**Toxics Prevention Division
Environmental Protection Branch - Ontario Region
4905 Dufferin Street
Downsview, Ontario M3H 5T4
Phone: 416-739-5856
Fax: 416-739-4251**

The Toxics Prevention Division of Environment Canada's Ontario Region was a partner in the CMPP project. Federal government task force members provided technical input, advice and assistance into all phases of the project as well as reviewing consultants reports and supporting municipal workshops.

The regional office of Environment Canada is committed to promoting pollution prevention as the most effective means of protecting the environment, eliminating costly waste and promoting sustainable development. Working with The Regional Municipality of Hamilton-Wentworth helps the federal government realize one of its national goals: to foster pollution prevention with other governments.

Voluntary Pollution Prevention Partnerships

In 1991 Environment Canada established the Great Lakes/St. Lawrence Pollution Prevention Initiative to produce reductions and/or eliminations in the use, generation and release of toxic substances. As part of this initiative the Toxics Prevention Division has worked to establish and implement several voluntary pollution prevention partnerships with municipalities, governments and industry.

Memorandum of Understanding have been established with the following sectors:

- Regional Municipality of Hamilton-Wentworth
- Automotive Manufacturers
- Metal Finishers
- Healthcare
- Dry Cleaning Industry
- Automotive Parts Manufacturers
- Printing and Graphics Industry

Partnership Agreements are in place for:

- Electrical Power Generators (Ontario Hydro)
- Paint and Pigment Industry
- Hazardous Waste

The Canada-Ontario Agreement

The 1994 Canada-Ontario Agreement is an agreement between federal and provincial governments with the ultimate goal of creating a healthy and sustainable Great Lakes Basin Ecosystem. The Toxics Prevention Division works to meet the commitments of this agreement through the establishment and support of voluntary pollution prevention partnerships; which aim to reduce the use, release and generation of substances targeted by the agreement.

Tools, Education and Training

Several products from the partnerships are practical tools that are available from the Toxics Prevention Division:

- "Metal Finishing Pollution Prevention Guide" (April 1995)
- Clean Production Benchmarking Study of Cleaning/Degreasing Processes and the Use of Metal Working Fluids in the Automotive Parts Manufacturing Sector (Draft September 1995)
- Review and Evaluation of the Literature in Pollution Prevention and Code of Management Practice for Printers (Draft October 1995)
- Pollution Prevention video for the Printing and Graphics Sector (November 1994)

The following are examples of training that the Toxics Prevention Division participates in delivering:

- North American Auto Supplier Environmental Workshop (October 20, 1995) - 100 participants from the US and Canada
- Second Annual Metal Finishing Pollution Prevention Workshop (October 3, 1995) - 80 Ontario metal finishing companies participated
- Pollution Prevention Awareness Workshop for Printers (June 15, 1995) - 180 participants from the printing industry
- Workshop Series on implementing ISO 14000 in the Automobile Parts Industry (September 1995 - April 1996) - 30 automotive parts companies participating

The division supports pollution prevention education and training through the Great Lakes Pollution Prevention Centre (GLPPC).

The Great Lakes Pollution Prevention Centre (GLPPC)

- works at arms-length with the government to promote and implement pollution prevention activities in the Great Lakes Basin
- offers training, technical assistance, databases, information, conferences, workshops, newsletters and advisory services

On The Internet

Environment Canada's Green Lane
<http://www.doe.ca/>

GLIMR - Great Lakes Information Management Resource
<http://www.cciw.ca/glimr/intro.html>

ONTARIO MINISTRY OF ENVIRONMENT AND ENERGY

Pollution Prevention Office
40 St. Clair Avenue West, 11th Floor
Toronto, Ontario M4V 1M2
Phone: 416-314-7893
P4 Hotline: 416-314-7910
Fax: 416-314-7930

The Pollution Prevention Office (PPO) of the Ministry of the Environment and Energy (MOEE) was one resource used in the CMPP project. MOEE advisors provided technical input into the various phases of the project, assisted in the writing and review of reports and information, helped to produce training material, participated in the municipal workshop, reviewed consultants' work, and identified resources for the project.

The Office fosters, promotes and develops principles, policies, and programs that enhance pollution prevention initiatives. Areas of involvement include voluntary partnerships, incentive programs, tools, education and training, and government leadership. A brief description of these follows.

Voluntary Pollution Prevention Partnerships

Voluntary pollution prevention partnerships (i.e. formal Memorandum of Understanding and informal agreements) with industrial, commercial, community and government sectors are created and implemented by the PPO. These partnerships advocate incorporation of environmental management systems and pollution prevention into an organization to produce reductions in the toxic substances and materials that are used, generated and released.

Memorandum of Understanding have been established with the following sectors:

- Motor Vehicle Manufacturers
- Metal Finishers
- Chemical Producers
- Automotive Parts Manufacturers
- Printing & Graphics
- Regional Municipality of Hamilton-Wentworth

Other Partnership Agreements are in place with:

- Photo Processing Mini-labs
- Restaurants
- Autobody Refinishers
- Industrial Laundries
- Food Processors
- Emery Creek Environmental Association

Pollution Prevention Pledge Program (P⁴)

This program promotes and enhances awareness, and accelerates acceptance and reporting of pollution prevention initiatives in the industrial, commercial, community and government sectors. A P4 Hotline (see next page) is available.

There are four levels of achievement/recognition in the program, with the highest level being P⁴. 190 facilities are enrolled in the program. Reductions of 21,000 tonnes of toxic substances and wastes used, generated or released have been reported (December 1995). The minister presents

annual awards for P4 achievements to facilities and to those demonstrating leadership roles in pollution prevention.

e.g. 1995 Pollution Prevention Pledge Program Achievement Award Winners:

- Kelly Auto Body (Hamilton)
- 1994 Pollution Prevention Leadership Award:
 - Hamilton Automobile Repair Association (Hamilton)

Tools, Education & Training

The office supports education and training through workshops, outreach activities to academic institutions and business associations like the Chamber of Commerce. Several products from the partnerships are practical tools that are available from the PPO.

- "Metal Finishing Pollution Prevention Guide" (April 1995)
- "Pollution Prevention/Best Management Practices for Textile Laundry Facilities" (December 1995)
- Autobody Profitability Workbook (Draft September 1995)
- Clean Production Benchmarking Study of Cleaning/Degreasing Processes and the Use of Metal Working Fluids in the Automotive Parts Manufacturing Sector (Draft September 1995)
- Review and Evaluation of the Literature in Pollution Prevention and Code of Management Practice for Printers (Draft October 1995)
- "Environment Code of Management Practice for Minilabs" (November 1994)
- Pollution Prevention video for the Printing and Graphics Sector (November 1994)
- "Pollution Prevention Planning - Guidance Document and Workbook" March 1993 (Revised, March 1995)

The following are examples of training that the PPO participates in delivering.

- North American Auto Supplier Environmental Workshop (October 20, 1995) - 300 participants from the US and Canada
- Second Annual Metal Finishing Pollution Prevention Workshop (October 3, 1995) - 80 Ontario metal finishing companies participated
- Pollution Prevention Awareness Workshop for Printers (June 15, 1995) - 180 participants from the printing industry
- Workshop Series on implementing ISO 14000 in the Automobile Parts Industry (September 1995-April 1996) - 30 automotive parts companies participating
- Autobody Profitability Workshop - Sept. 15, 1995 - 170 participants
- Two workshops with The Conference Board of Canada on "Voluntary Environmental Initiatives" -Feb. 1996 - approx. 18 participants each

Government Leadership

The office also encourages other parts of government to incorporate environmental management systems and pollution prevention principles into external programs, policies and legislation. Some of these initiatives include:

- Developing non-regulatory approaches to environmental protection which utilize

environmental management systems (EMS) and pollution prevention, such as Recognizing and Encouraging Voluntary Action (REVA).

- Leading the development of a national pollution prevention strategy for the Canadian Council of the Ministers of the Environment (CCME) through Federal/Provincial/CCME working groups (June 1995).
- Promoting pollution prevention for MOEE Operations staff with a Road Show.
- Holding ISO 14000 Workshops for MOEE staff.
- Coordinating with other Divisions within the Ministry, i.e. Conservation and Prevention, Policy Division, Operations Division to deliver pollution prevention and reduction initiatives i.e. Green Industry Strategy.

ORGANIZATIONS

Pollution Prevention

Great Lakes Pollution Prevention Centre, 265 N. Front. St. Suite 112, Sarnia, Ontario N7T 7X1, 519-337-3429, email: sarnia@glppc.org

National Pollution Prevention Roundtable, 2000 P Street NW, Suite 708, Washington, D.C. 20036, 202-466-P2P2

Environmental Issues for Municipalities

International Council for Local Environmental Initiatives (ICLEI), City Hall, East Tower, 8th Floor, Toronto, Ontario, M5H 2N2, 416-392-1390

Association of Municipal Recycling Coordinators (AMRC), 25 Douglas Street, Guelph, Ontario, N1H 2S7, 519-823-1990

Association of Municipalities of Ontario (AMO), 250 Bloor St. E., Suite 701, Toronto, Ontario M4W 1E6, 416-929-7573

Canadian Municipal Environmental Managers, Brenda Sakauye - City of Mississauga, 905-615-3217 or Dale Rhyason - City of Edmonton, 403-496-6701

Federation of Canadian Municipalities (FCM) 24 Clarence St., Ottawa, Ontario K1N 5P3, 613-241-5221

Green Procurement

Canadian Buy-Recycled Alliance (CBRA), 26 Wellington St. E. Suite 601, Toronto, Ont. M5E 1S2 Canada, 1-800-945-6555 or 416-594-3461, fax 416-594-3463.

FURTHER READING

Pollution Prevention/Source Reduction

Guideline for Pollution Prevention, Z754-94, June 1994, Canadian Standards Association, 178 Rexdale Boulevard, Rexdale, Ontario, M9W 1R3, 416-747-400, 36 pages

Pollution Prevention Planning: Guidance Document and Workbook, Ontario Ministry of Environment and Energy, ISBN 0-778-1441-2, 89 pages plus appendices.

Pollution Prevention: A Guide for Local Government, 1994, International City/County Management Association, Publications Department, 777 North Capitol Street, N.E., Suite 500, Washington, D.C. 20002, 800/745-8780, ISBN: 0-87326-073-2, 107 pages

Working Your Way to A Green Office: A Guide to Creating an Environmentally Friendly Office, Environment Canada, ISBN 0-662-19629-5, 48 pages

Workplace Guide: Practical Action For the Environment, 1991, Harmony Foundation of Canada, Box 3444, Station D, 340 Laurier Ave. West, Ottawa, Ontario K1P 6P9, ISBN 0-929010-04-3, 170 pages, including worksheets.

Environmental Management

A Guide to the Eco-Management and Audit Scheme for UK Local Government, A Manual for Environmental Management in Local Government, 1993, HMSO Publications, P.O. Box 276, London, England, SW8 5DT, Telephone orders 071-873-9090/1993, ISBN 0-11-752719-X, 256 pages, including worksheets.

Total Quality Environmental Management Primer and Self-Assessment Matrix, 1993, The Council of Great Lakes Industries, 555 South Forest Street, Suite 4A, Ann Arbor, MI 48104, 313-259-3238, (for copies write to c/o Detroit/Wayne County Port Authority, 151 West Jefferson, Suite 275, Detroit, MI 48226), 82 pages, including worksheets.

Green Procurement

Environmentally Responsible Procurement ("Green Procurement"), Z766-95, January 1995, Canadian Standards Association, 178 Rexdale Boulevard, Rexdale, Ontario, M9W 1R3, 416-747-4000, ISSN 0317-5669, 57 pages

Your Guide to Green Purchasing, The Pitney Bowes Green Office Program, 2200 Young Street, Suite 100, Toronto, Ontario M4S 3E1, 1-800-263-4567, 36 pages

Development of Criteria for Green Procurement; Summary Report, Prepared by the Delphi Group for the National Round Table on the Environment, 1996

G.I.P.P.E.R.'S Guide to Environmental Purchasing, Ontario Ministry of the Environment, October 1992, Governments Incorporating Procurement Policies to Eliminate Refuse

The Packaging Waste Reduction Guide; Minimizing Solid Waste Through Efficient Procurement Practices, Federation of Canadian Municipalities

Water Conservation

Water-Saving Devices (November 1992), prepared by the Canadian Wildlife Service branch of Environment Canada, provides a listing of various high efficiency water appliances, miscellaneous conservation opportunities, and product suppliers.

Manual for Conducting Water Audits and Developing Water Efficiency Programs at Federal Facilities and *A Water Conservation Plan for Federal Government Facilities* (both published in January 1993), were prepared by Environment Canada, and describe the federal government's strategy for conserving water as part of the Federal Green Plan. These publications also detail thirteen case studies of successful water conservation projects at various types of government facilities (e.g. schools, office buildings, research centres, airports, laboratories, etc.).

APPENDIX B - CMPP PROJECT DOCUMENT LIST

Copies of these documents can be obtained from:

The Great Lakes Pollution Prevention Centre

265 N. Front Street, Suite 112

Sarnia, Ontario N7T 7X1

Tel: 519-337-3423 / 800-667-9790

Fax: 519-337-3486

E-mail: sarnia@glppc.org

Printing and postage fees will apply.

Memorandum of Understanding, Project Outline and Appendices, between The Regional Municipality of Hamilton-Wentworth, The Ontario Ministry of Environment and Energy, and Environment Canada. March, 1994.

Inventory Phase Summary Report, CMPP Project, April 1995

Pollution Prevention Inventory Guidelines and Worksheets, CMPP Project, 1996
(General Information, Solid Waste, Hazardous Waste, Energy and Water)

Employee Transportation Survey Summary Report, Region of Hamilton-Wentworth, CMPP Project, Final Draft, August 1995, 20 pages.

Instructors Manual, Pollution Prevention Training For Municipal Staff, Prepared by the Great Lakes Pollution Prevention Centre for the CMPP Project, 1995

Implementation Workbook, Pollution Prevention Training For Municipal Staff, Prepared by the Great Lakes Pollution Prevention Centre for the CMPP Project, 1995

Student Workbook, Pollution Prevention Training For Municipal Staff, Prepared by the Great Lakes Pollution Prevention Centre for the CMPP Project, 1995

Training Video, Comprehensive Municipal Pollution Prevention Project, (Length: 42:22 min), Part 1: Introduction to Pollution Prevention (23:19 min), Part 2: Implementing Pollution Prevention (19:03 min), Prepared by the Great Lakes Pollution Prevention Centre for the CMPP Project, September 1995

Communications Strategy, Comprehensive Municipal Pollution Prevention Project, Prepared by LURA Group for the CMPP Project, August 1995.

Final Report, Part A - Technical Input into Implementation Plans, Prepared by PAL-TECH ENGINEERING INC. for the CMPP Project, August 1996

Appendices to Final Report, Part A - Technical Input into Implementation Plans, Prepared by PAL-TECH ENGINEERING INC. for the CMPP Project, August 1996

APPENDIX C - POLLUTION PREVENTION EXAMPLES & CASE STUDIES

Source: CMPP Project Appendices to Final Report, August 1996
Part A: Technical Input into Implementation Plans, Appendix E

Introduction	C-1
C.1 General Opportunity Examples	C-1
C.2 Solid Waste	C-2
C.3 Hazardous Material	C-3
C.4 Water	C-4
C.5 Energy	C-6
C.6 Purchasing	C-8
C.7 Transportation/Air Emissions	C-9
C.8 Other Air Emissions	C-12
C.9 Wastewater Treatment Plants	C-13

Introduction

As part of the overall scope of work completed by PAL-TECH ENGINEERING, a summary of related pollution prevention programs, case studies and resources was compiled for the Regional Municipality of Hamilton-Wentworth. Although a broad range of associated examples was identified, PAL-TECH decided to list only those considered relevant and possibly useful to CMPP staff and Steering Committee members.

A variety of example pollution prevention programs and case studies is presented in this Appendix. This is supplemented with contact names where appropriate. Although these examples do not represent an exhaustive list of all successful pollution prevention programs, they are considered a reference foundation providing useful information and ideas which might assist in the successful implementation of the Region's CMPP Project. PAL-TECH has also noted additional information pertaining to pollution prevention opportunities for the Regional Municipality of Hamilton-Wentworth, including:

- specific pollution prevention opportunities for Park Place, Victoria Yard and the Regional Laboratories, as identified during Work Location assessments of these facilities. (Refer to Appendix A of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans.)
- examples, and general operational procedures (*i.e. methods, techniques, programs, etc.*) that can be incorporated into the daily operations of an organization. (Refer to Appendix B of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans.)
- examples of potential policy/authority/bylaws that could be developed and incorporated by the Region. (Refer to Appendix C of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans.)
- a list of specific and successful community-wide case studies. (refer to Appendix D of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans.)
- persons contacted during our research, refer to Appendix P of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans.
- relevant and useful publications, refer to Appendix R of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans.

C.1 General Opportunity Examples

- i. 3M initiated its Pollution Prevention Pays (3P) program in 1975 with the objective of preventing pollution at the source in products and manufacturing processes, rather than removing it after it has been created. Since 1975, the company has cut pollution (*per unit of production*) in half, avoided more than 500,000 tons of pollution, and saved over \$500 million.
- ii. The Anchorage Chamber of Commerce (ACC), an Alaska non-profit corporation, has developed and implemented an innovative program called the Green Star® Program, which

brings the public, government and local industry together to work positively to promote environmental awareness and responsibility (*for more information contact Patricia Bliss, Program Coordinator, Anchorage Chamber of Commerce, (907) 272-2401*).

- iii. The City of Cincinnati has established an ongoing pollution prevention program, assisted in part by a grant from the U.S. EPA. The purpose of this project is to establish a model urban area pollution prevention strategy to demonstrate the environmental and economic benefits of pollution prevention (*for more information contact Bruce Suits, P2 Program Manager, Office of Environmental Management, Cincinnati, Ohio, (513) 352-6270*).
- iv. The U.S. Environmental Protection Agency (EPA) has established a number of programs aimed at developing pollution prevention opportunities within companies. Examples of programs which may be of particular interest include:
 - Environmental Leadership Program (EL) provides special recognition to companies and facilities that demonstrate CEO-level commitment to prevention-oriented environmental management; this commitment must extend beyond compliance. Elements of the program include the development of "Corporate Statement of Environmental Principles" and "Model Facility Program". In brief, conditions of recognition would require a commitment to monitoring and accountability, and public disclosure of resource consumption levels and generation rates of waste.
 - "Green Lights Program" encourages voluntary reduction in energy use through more efficient lighting technologies. More than 700 respondents have agreed to audit their facilities and, where possible, upgrade lighting efficiency in 90 percent of their total facility area within five years. It is reported that Green Lights participants are saving more than 35,000 kilowatts annually (*equivalent to 6.9 million US dollars*) in electricity.
 - the joint EPA and General Services Administration (GSA) "Cleaners Project" involves the development of cleaning product procurement criteria based on considerations of efficiency, human health and environmental safety. The objective of the program is to not only advance pollution prevention principles at the federal supply system, but also among private sector purchasers.
- v. The Ontario Management Board Secretariat initiated "The Green Workplace" program in a number of Ontario Government Offices in 1991. This program focuses on reducing pollution through waste reduction, energy and water conservation, green transportation, and environmentally responsible purchasing practices. The program has been so successful that it is being re-launched as "The Maximum Green Program" which will extend to an additional 22,000 government staff (*for more information contact Dave Sparling at (416) 327-2671*).
- vi. The City of Waterloo has implemented an "Environment First" policy which states that the City will consider environmental impacts with respect to all City services and programs, including purchasing practices, before making decisions on how to proceed.

C.2 Solid Waste

- i. Bell Canada has initiated a "Zero Waste" program for facilities located across Ontario and Quebec. The objectives are to generate zero solid waste, demonstrate that waste reduction can be achieved at very little cost, and ensure that their facilities act as environmental

models. At the pilot stage in an Etobicoke facility, a cost savings of \$25,000 was achieved in the first year as a result of decreased waste generation. Bell estimated that the \$18,000 start-up expense was paid for in the programs' first seven to eight months. Other highlights of the program include:

- composting an estimated 64 kg of waste per day on site
 - working with suppliers (*e.g. food suppliers*) to eliminate many disposable materials
 - replacing desk side garbage bins with central disposal locations.
- ii. Eastman Kodak has embraced the pollution prevention hierarchy by implementing their "Waste Minimization Standard" (*WMS*) program. This initiative forms a key part of the company's environmental program and commits all company units to source reduction, and resource recovery, with recycling and waste treatment as last priority steps in the process.
- iii. A number of Municipal governments located in Ontario have completed waste audits of their facilities and implemented successful waste reduction programs. Examples of these municipalities include, but are not limited to, the following:
- Municipality of Toronto
 - Region of Ottawa-Carleton
 - Regional Municipality of Peel
 - Regional Municipality of Waterloo.

In each of these cases, the municipal organization was able to reduce and divert a large percentage of their solid waste from disposal, reducing the municipality's impact on the environment and improving the corporation's bottom line.

- iv. Houston's Prolar Metal Processing Company, the largest scrap steel recycler in Texas, began to collect aerosol cans as part of its municipal collection program in Houston, Texas, in 1992. Houston City is planning to expand its current 46,000 household curbside recycling program to 350,000 households.

In the current program it is estimated that the 15% of the collected cans are aerosols.

C.3 Hazardous Material

- i. A number of municipal and provincial government agencies have implemented "Innovative Turf Management" programs with the objective of minimizing the use of chemical pesticides and fertilizers in their daily operations (*i.e. management of parks, lawn, forests, etc.*). Examples of organizations which have instituted this type of progressive initiative include, but are not limited to, the following:
- City of Waterloo "Plant Health Care Program" (*the proportion of turf area sprayed with pesticides has been reduced from 72% in 1979 to 2% in 1993, even though green space in the city has increased by 150% in the same interval*)
 - Department of National Defence "New Directions in Pest Management".
 - Ontario Ministry of Natural Resource "Vegetation Management Alternatives Program" (*VMAP*)
 - Ontario Government xeriscape garden, at Queen's Park, 250 Davisville Ave. facility,

- and other provincial government facilities
- Ontario Ministry of Transportation "Integrated Vegetation Management" (IVM) Program.
- ii. Environment Canada has made a commitment to eliminate the use of hazardous materials in its operations whenever suitable alternatives exist. Where this is not possible, all reasonable efforts are applied to reduce consumption through better procedures and practices. For example, as part of the Canada Centre for Inland Waters "Go Green" initiative, the quantity of benzene utilized within the on-site laboratories has been reduced substantially since 1992.
- iii. Northern Telecom has established a pollution prevention program, which includes a successful chemical minimization initiative; this program targets hazardous material use in all departments, including administration (*e.g. liquid paper, photocopier toner*), and manufacturing (*e.g. the company eliminated the use of CFC solvents and halons well before the required dates established in the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer*).
- iv. A broad range of small, medium and large corporations has implemented successful hazardous waste minimization programs, practices and procedures. Examples of Ontario companies include, but are not limited to, the following:
- Kelly Auto Body (1989) Ltd., Hamilton. This firm reduced its washing solvent wastes by 80%.
 - Careful Hand Laundry and Dry Cleaners Ltd., North York. Perchloroethylene usage was reduced by 42%.
 - Guelph Utility Pole Co. Ltd., Nichol Twp. Pentachlorophenol is used as a preservative for utility poles. This firm reduced its pentachlorophenol waste volume by 99%.
 - Lennox Industries (Canada) Ltd., Etobicoke. All adhesives containing 1-1-1 trichloroethane were eliminated, and the use of 17 aerosol solvents, lubricants and spray paints was reduced by 50%.
 - R.B.W. Graphics in Owen Sound reduced hazardous waste by 92%.
 - Essex Specialty Products in London has cut its hazardous waste by 95%, thereby saving over \$160,000 annually.
 - Chrysler Canada - Windsor Assembly Plant substantially reduced the generation of hazardous wastes and saved approximately \$2 million.

C.4 Water

- i. The Sheraton Centre Hotel and Towers (*Toronto*) has progressively instituted water and energy conservation measures since 1971. These initiatives were further enhanced in 1987, using an Automated Building Control System (*i.e. a computerized metering system*) to monitor and control water and energy usage. Other measures implemented since 1980 include, but are not limited to:
- reclaimed steam in the laundry

- low flow shower heads
- faucet aerators
- automated taps and toilets in public areas.

The following savings have resulted from these initiatives (1989 dollars):

- total annual water reduction = 228,270 cubic meters per year
 - total annual water savings = \$152,696
 - total annual energy savings = \$116,000
 - total annual cost savings (water + energy) = \$268, 696.
- ii. The Regional Municipality of Ottawa-Carleton has implemented xeriscaping, and other landscaping water conservation practices with their Xeriscape Demonstration Garden and "Wise Use of Water" program. A summary list plants and a garden guide are currently in draft preparation and will be available for release at a future date.
 - iii. A xeriscape garden has been developed at Queen's Park in Toronto. This garden is used for demonstration purposes as part of the Water Efficiency Ontario Strategy to encourage and help in the development of more water-efficient gardens. Information is provided to interested parties regarding plant selection, design, layout and maintenance. In addition, xeriscaping methods also reduce the use of, and dependency on, pesticides.
 - iv. A broad range of other organizations has implemented low water usage landscaping including, but not limited to, the following:
 - City of Regina (contact Bev Velestuk 306-777-7412)
 - the Belleville Public Utilities Commission
 - the Canada Centre for Inland Waters
 - v. Epton Industries (previously owned and operated by B.F. Goodrich Canada) undertook a significant water efficiency program in 1990. Major areas of water use (boiler make-up water, cooling water, washrooms and showers) were targeted and suitable conservation measures were implemented, resulting in a 60% (365 cubic meters per day) reduction in daily water consumption. Employee participation by all levels of staff and all departments is a key factor in the program's success. Participation is increased through an in-house staff committee and "Idea Program" which encourages and solicits employee input and rewards them accordingly. Overall gross savings resulting from conservation programs in 1992 were \$207,500, achieved at a cost of \$179,600.
 - vi. J.M. Schneider Inc. (Kitchener) has implemented a very successful water efficiency program through its "Continuous Improvement" (CI) team. Each major process area within the company has a CI team. Teams include plant employees with a mandate to reduce and control water use and sewage production. Overall company water use and discharge goals are successfully achieved by allowing individual teams to develop and implement their own conservation projects. As a result of these projects, overall water usage was reduced from 2.1 million cubic meters per year in 1989 to 1.2 million cubic meters per year in 1993.

C.5 Energy

- i. The Ontario Government's "Green Workplace" program initiated aggressive energy conservation measures in all of its government-owned buildings. A five-year \$100 million retrofitting program will pay for itself within 5 years, saving \$20 million each year in energy costs.
- ii. The City of Regina implemented a "Carbon Dioxide Reduction Plan". This included a broad range of activities including lighting and window upgrades, conversion from electricity to natural gas, motor power factor corrections, lighting controls, etc. In 1993 and 1994 the city invested a total of \$675,500 and \$186,000 respectively. As a result, the city achieved annual savings of \$208,700 and \$76,800 respectively.
- iii. Marshall Gowland Manor for seniors (*Sarnia*) implemented a number of energy reducing upgrades (*air handling modifications, natural gas conversion, operator training, etc.*) through Rose Technology Group Ltd., an Energy Service Company (ESCO)¹. The conservation measures cost \$146,000, and resulted in annual savings of \$49,000.
- iv. Samsonite Canada Inc. (*Stratford*) signed an agreement with the energy performance contractor, EnerShare Technology (*Toronto*), which guaranteed operating benefits of approximately \$114,000 by implementing capital improvements (*e.g. more efficient lighting, sensors, timers, repairing seals around entrances, etc.*) totalling \$60,000.
- v. GEC Alsthom (*Montreal*) installed a Space-Ray (*division of Gas-Fired Products Inc., North Carolina*) gas-fired infrared tube heating system, replacing conventional steam heating. This retrofit, which was installed over a three and a half month period at a cost of \$1.5 million (*\$500,000 less than repairing old system*), is generating a 30% to 40% reduction in related operating costs. Typically, radiant infrared heating systems are most appropriate for industrial space heating purposes (*e.g. truck bays, garages, manufacturing plants, etc.*).
- vi. A number of municipal governments in both Europe and North America have attained significant savings as a result of comprehensive energy efficiency programs, including, but not limited to, the following²:
 - City of Toronto in Canada
 - State of Iowa in the U.S.
 - City of Oslo in Norway
 - City of Leicester in the U.K.
 - City of Phoenix in the U.S.

¹ An Energy Service Company (ESCO) is a firm that performs building energy retrofits on a turnkey basis, taking responsibility for analysis, financing, design, installation, commissioning, training and post-construction services; the service firm receives payment exclusively from the client's actual energy cost savings.

² Refer to Profiting from Energy Efficiency - A Financing Handbook for Municipalities (1993), published by International Council for Local Environmental Initiatives in Toronto, Canada for additional information on any of these case studies.

- vii. The Canada Centre for Inland Waters (CCIW) "Go Green" initiative includes an employee education and awareness program for energy conservation (e.g. signs, newsletters, bulletin boards, "energy days", etc.). Through participation in the Federal Buildings Initiative (FBI) Program, CCIW hired an energy consultant who will invest in energy efficient devices and operational procedures at no initial cost to the CCIW. The capital investment will be repaid to the energy consulting firm using funds derived from the estimated energy savings of \$590,000 per year.
- viii. The Canadian Industry Program for Energy Conservation (CIPEC), located in Toronto, co-sponsors the Industrial Energy Innovator program (*in cooperation with Natural Resources Canada*). As a member of the initiative, an organization voluntarily sets energy efficiency targets, undertakes various action plans, and is supported by CIPEC (i.e. technical assistance, guidance, training, etc.). Members also are automatically enrolled in the Voluntary Climate Change and Registry Program, which documents industry sector initiatives and achievements in reducing greenhouse gas emissions.
- ix. Ontario Hydro completed a major retrofit of its fluorescent lighting at its University Avenue headquarters in Toronto. The retrofit cost approximately \$2.5 million and provides annual energy savings of \$500,000, representing an energy savings of 29%. This retrofit saving represents only 5 Gigawatt hours of an estimated total annual 600 GWh savings that Ontario Hydro has realized through operating efficiencies applied in 1994 and 1995. This represents an overall yearly saving of \$25 million.
- x. Many organizations are also looking to more progressive methods to reduce energy consumption and to reduce their dependence on nonrenewable energy sources such as fossil fuels. For example, solar energy has not been neglected in continuing efforts for energy savings while seeking to reduce pollution in the process. Solar power provides a means of "renewable" energy savings both directly and indirectly. This is accomplished directly through replacing the use of fossil fuels with, for example, photovoltaics or wind turbines, as a means of generating electricity. Indirectly, the capture of radiant energy in passive solar systems continues to be used as a means of heating and/or supplying hot water for a variety of human habitations. Examples of practical applications of solar power include, but are not limited to, the following:
 - promotional literature from Canron Photovoltaics Inc. of Hamilton, Ontario points out that photovoltaic cells, first used to power satellites in the late 1950's, are now used for resorts in Switzerland and water pumping in third world countries. For more local applications, this Hamilton firm offers a range of stand-alone photovoltaic packages, which include photovoltaic modules (*a solar generator*), batteries and control boxes. According to Per Drewes of OHT's Electrical Systems Technology (*in his paper Photovoltaics in Buildings: The Utility Perspective*), the Electrical Power Research Institute recently estimated a market of 11.5 Mw within the next five years for small photovoltaic applications within their member electric utilities."
 - the October 1995 SOL newsletter describes a 100,000 square foot. "Solarwall" supplied by Matrix Energy of Kirkland, Quebec covers the entire south-west face of Canadair's 1.25 million square foot machining centre and aircraft-parts fabrication facility in Ville St. Laurent, Quebec. Its installation cost of \$1.8 million was

estimated to be equal to that of an equivalent natural gas system; annual cost savings are estimated at \$180,000, relative to natural gas.

- The Metropolitan Toronto and Region Conservation Authority's Kortright Centre for Conservation has a Renewable Energy Demonstration Cottage located on its grounds. This cottage incorporates a 180-watt photovoltaic solar generator and a 250-watt wind electrical generator. Power is stored in batteries for operating lights, a refrigerator, water pump and a variety of appliances including a television. Solar heating is used in combination with a high efficiency woodstove for heating the cottage in the winter months. These heating systems are in turn enhanced through energy-efficient landscaping (*through strategic placement of trees around the cottage*), windows, doors, and appliances as well as substantial insulation.
- Ontario Hydro's September 1995 newsletter Footprints Sustainable Energy Development, reports that a Hydro employee drives an electric "Citi car" 100 to 150 kilometres per week using 0.1 kWh per kilometre. This translates to a cost of approximately 0.5 cents per kilometre. It is estimated that a gasoline-powered vehicle converted to run on electricity will cost approximately 2 to 3 cents per kilometre to operate, as it will be much heavier than the Citi car. However, normal costs for a gasoline fuelled vehicle is approximately 8 to 10 cents per kilometre plus maintenance. Battery replacement for the electric vehicles is estimated at \$2,000 every 5 years.

C.6 Purchasing

- i. In June of 1989, Metropolitan Toronto organized a forum to co-ordinate efforts of various government levels to address procurement practices which magnify waste/pollution problems. As a result of this initiative, a committee was established called Governments Incorporating Procurement Policies to Eliminate Refuse (*GIPPER*). The goal of GIPPER is to investigate, develop and promote effective government purchasing policies which will contribute to an overall national reduction in waste generation of 50% by the year 2000.
- ii. The City of Waterloo has an "Environment First" policy which states that the City will consider the environmental impacts related to all City services and programs before making associated decisions; considerations include procurement practices.
- iii. The United Nations Development Programme's (*UNDP*) "Green Office Programme" is an excellent example of a system for implementing environmentally responsible procurement practices within an organization. The UNDP has also developed a number of very useful Environmental Standards for various office products and supplies, detailed in the UNDP's document, Introducing...The "Green" Office Programme. The UNDP is also developing a database of suppliers whose products are environmentally responsible, and lists of hazardous and/or banned items.
- iv. Under the National Round Table on the Environment and the Economy, a Task Force on Green Procurement was established in October, 1994 to promote environmentally responsible purchasing by the federal government. This is to serve as a model for other

levels of government as well as private industry. A national forum on environmentally responsible or "green" procurement, that will bring together purchasers and policy makers in the federal government with suppliers, is planned for early 1996.

- v. The Purchasing Management Association of Canada is dedicated to providing national leadership in purchasing and supply management, and maintains a base of information regarding environmentally responsible procurement practices and issues.
- vi. The Canadian Buy-Recycled Alliance (CBRA), located in Toronto, is a not-for-profit, national organization that promotes and encourages increased demand for recycled products. It publishes the Canadian Directory of Recycled Products which contains information on:
 - how to buy recycled products
 - who is manufacturing and selling recycled products
 - where to receive further information.

C.7 Transportation/Air Emissions

- i. The "Green Fleets Project" launched in late 1993, under the auspices of the International Council for Local Environmental Initiatives (ICLEI), encompasses the development of recommended actions, policies and strategies that municipalities can use to reduce the emission of greenhouse gases, and related pollutants, through reduced transportation.
- ii. California State Law authorizes the California Highway Patrol and local police to issue tickets to the owners of "smoking" vehicles. A mandatory fine for a first offence is \$100 for cars and \$250 for trucks and buses. In preference to issuing fines, the Air Quality Management District (AQMD) has established a 1-800 telephone line for the purposes of reporting smoking vehicles (*by licence plate number*) by the general public (*callers remain anonymous*). Offenders are issued a letter and are encouraged to make the necessary repairs to avoid being cited.
- iii. California Air Quality Management District's (AQMD) Commuter Program, Regulation XV, requires employers to encourage their workers to rideshare (*i.e. carpool, use public transit, bicycle, or walk*). As well, government regulations in the form of city and county ordinances require developers and/or employers to implement a variety of transportation control measures (TCMs) aimed at reducing the proportion of single-occupant vehicle (SOV) trips to their facilities.
- iv. California AQMD has introduced the RECLAIM program (*Regional Clean Air Incentives Market*) as a revolutionary approach for improving air quality by utilizing the power of the economic marketplace. (*refer to Regional Clean Air Incentives Market (RECLAIM) document prepared by the South Coast Air Quality Management District; listed in Appendix R of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans*).
- v. California AQMD Small Business Assistance Office helps small business owners participate in regulatory developments, and comply with clean air rules and legislation in the most cost-effective way possible (*refer to, Small Business Assistance Resource Guide*

document listed in Appendix R of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans).

- vi. In Sacramento County, California no firm can hire 100 or more employees without first applying for a Trip Reduction Permit. As a condition of the permit, these employers must provide employees with the services of an on-site trip reduction coordinator, responsible for developing, facilitating, and monitoring a Trip Reduction Program.
- vii. British Columbia's GO GREEN program was founded in 1990 to encourage Lower Mainland BC residents to change their transportation habits, to improve air quality, and to help decrease traffic congestion. The program includes a campaign aimed at increasing public awareness of general air quality/emission issues, and the problems associated with single occupancy vehicles. For example, the program promotes rideshare programs, better access to transit, telecommuting, flexible work hours, etc. The program is sponsored and endorsed by a variety of organizations.
- viii. BC Transit offers a Transportation Demand Management (TDM) Employee Transportation Administrator (ETA) training program. This program is the first of its kind in Canada. It provides employers (*typically firms with 25 employees or more*) a two day training program which highlights the key steps involved in developing an action plan, at the corporate level, for improving air quality through TDM.
- ix. British Columbia's AirCare program for vehicle emission maintenance and testing began operation in BC's Lower Fraser Valley in September of 1992. This is a joint program between the BC Ministry of Transportation and Highways, and Ministry of the Environment, with assistance from the Greater Vancouver Regional District (GVRD). The program identifies light-duty vehicles generating unacceptable levels of air pollutants, and requires that these vehicles be repaired/tuned before they can qualify for auto insurance renewal (*auto insurance is managed by the BC's provincial government*).
- x. British Columbia's Greater Vancouver Regional District (GVRD) Air Quality Management Plan, prepared in the past seven years, is intended to prevent the deterioration of the Lower Fraser Valley's air quality. This plan may be helpful for the development of Hamilton-Wentworth's (*or any other local/regional government's*) local action plan, in response to the Canadian Declaration on Climate Change and the Urban Environment (*refer to brochure titled, Ensuring Clean Air for British Columbia: How Far Have We Come? listed in Appendix R of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans*).
- xi. British Columbia's Jack Bell Foundation, a not-for-profit organization, started the JBF Vanpool in February 1992. This highly successful service is funded by donations and was established to reduce air emissions and traffic congestion in Vancouver.
- xii. Ontario's Clean Air vehicle emission pilot program, currently operated by ProtectAir (*an emission testing contractor*) and funded by the MOEE, is a one year study on how vehicles can:
 - reduce fuel consumption through improved fuel economy, and
 - protect the environment through reduced engine emissions.

- xiii. Noranda Minerals Inc. implemented bicycle-to-work facilities, including showers and bike lockers, when their office was transferred to a new building (*One Financial Place at Adelaide and Yonge St., in Toronto*). This has not only served to meet the demands of existing bicycle commuters within the company, but has also inspired interest among other employees to cycle to work.
- xiv. Advanced Filter Cleaning of Woodstock, Ontario picks up and cleans air filters, using an environmentally responsible cleaning system, at a fraction of the cost of purchasing new filters. The filters, which retain 98% of their efficiency, can be reused 5 to 10 times.
- xv. Calgary Transit has initiated a number of unique undertakings, such as:
- programs for City employees including, car pooling, flextime, and revisions to the existing bike plan to facilitate the use of bikes to/from work
 - their one year (*started June 1990 and later moved to the City's Engineering and Environmental Services Department*) Air Improvement Resolution (AIR) program designed to reduce the number of single occupant vehicles (SOVs) on city streets. When the AIR number (*announced daily*) matches the last number of a vehicle's license plate, the owner of that vehicle is encouraged to use other forms of transportation to get to work (e.g. utilize car-pooling, public transit, bicycling, etc.)
 - the "umbrella" AIR Program launched in spring of 1993 publicizes "Care for the Air" and "SMOGFREE" (*Save Money On Gas From Reduced Exhaust Emissions*) newsletters. This program also encourages voluntary vehicle emission testing using Environment Canada parameters.
- xvi. BC Tel (*operator of a vehicle fleet numbering over 4000 vehicles*) has had great success in the area of environmental transportation management, including:
- a cost effective, company run carpooling program utilized by about 140 employees (*35-38 cars*). Company owned and/or leased cars, that were previously parked overnight, are now being used to transport employees to and from work. Employees are required to sign an agreement with BC Tel to contribute towards the lease, insurance, maintenance and FUEL (*per km charge*) for operating the cars. Each car holds 3 to 7 persons, thus reducing the number of cars driven to various work locations by up to 80% (*for those employees that participate in the program*).
 - implementing an active vehicle inspection and preventative maintenance program that has increased the average life span of large fleet trucks and equipment by 100%
 - subjecting all fleet vehicles to comprehensive AirCare emission testing for the development of a management tool for subsequent vehicle purchase selection and maintenance program development
 - investigating alternative fuel vehicles. Currently, the company maintains 200 propane and 40 natural gas vehicles.
 - recycling of all tires, oil and engine coolant
 - mandating a Vehicle Utilization Program which ensures that the correct number of vehicles are purchased to meet the company's requirements. In addition, this program attempts to eliminate unnecessary maintenance on vehicles that are used less

frequently.

- no subsidized parking for any employee.
- xvii. In many U.S. cities, local governments are using reverse psychology to promote alternative modes of transportation. This is accomplished by implementing measures which frustrate drivers and create congestion in the downtown core (*e.g. regulating traffic signals, ongoing construction, narrowing roads, etc.*). Although we do not encourage this option, it may warrant further review. It is believed that these measures will indirectly persuade drivers to use mass transit and "avoid the traffic"; thus, encouraging pollution prevention.
- For information regarding alternative vehicle fuels, refer to:
 - Canadian Gas Association
NGV Development Office
905 Burnhamthorpe Road West
Mississauga, Ontario L5C 3B4
 - Ontario Natural Gas Association
77 Bloor Street West, Suite 1104
Toronto, Ontario M5S 1M2
 - Natural Gas Vehicle Program
P.O. Box 4513
Postal Station E
Ottawa, Ontario K1S 5B4
 - Canadian Oxygenated Fuels Association
190 Bronson Ave.
Ottawa, Ontario K1R 6H4
 - Canadian Renewable Fuels Association
190 Nicklin Road
Guelph, Ontario N1H 7L5
 - Electric Vehicle Association of Canada
395 Matheson Boulevard East
Mississauga, Ontario L4Z 2H2.

C.8 Other Air Emissions³

- Northern Telecom Ltd. (NTL) has developed a step-by-step manual on CFC solvent elimination strategies - available through NTL Environmental Affairs.
- Environment Canada's Atmospheric Environment Service's Greenhouse Gas Miser Program (*Handbook prepared January 1993*)
- Environment Canada's A Matter of Degrees: A Primer On Global Warming (1993).

³ Examples of successful programs addressing "Indoor Air Emissions" were not found during this research.

C.9 Wastewater Treatment Plants

- i. The City of Collingwood has implemented a phosphorous optimization process for the treatment of wastewater, resulting in a significant reduction in chemical usage (*overall chemical costs have been reduced from approximately \$100,000 per year to \$25,000*). The process employs an on-line phosphorous analyzer that takes into account flowrate fluctuations, and regulates the delivery of the exact amounts of alum required for the treatment process. This project, requiring the development of software and related technology, was jointly funded by the MOEE, Environment Canada and the Wastewater Technology Centre (WTC). Contact Don Green, City of Collingwood, Engineering Department (705)-445-1292 for additional information.
- ii. A number of drinking water plants and wastewater treatment facilities are investigating conservation methods to reduce the consumption of water, energy and chemicals. Although specific case studies are not included in this document, it is recommended that the reader review Section B.4.2 of Appendix B of CMPP Project Appendices to Final Report, August 1996, Part A: Technical Input into Implementation Plans, and contact various municipal and private WTP/STP operators to obtain further information in this regard. Suggested areas where savings may be pursued include, but are not limited to, the following:
 - optimization of coagulants
 - substituting polymer coagulants for the more traditional coagulants (*e.g. ALUM, ferric sulphate, etc.*)
 - optimization of dissolved oxygen in aeration tanks through retrofits and computer controls
 - chlorine alternatives
 - sludge re-circulation
 - removal of nitrogen and phosphorous, etc.

APPENDIX D - POLLUTION PREVENTION ACTION PLAN

for

Regional Municipality of Hamilton-Wentworth

Environmental Services Department

November 1995

1.0 INTRODUCTION	D-1
1.1 Comprehensive Municipal Pollution Prevention Project (CMPP)	D-1
1.2 Action Plan Development	D-1
1.3 Department Profile	D-2
2.0 THE ACTION PLAN	D-3
2.1 Pollution Prevention Vision Statement	D-3
2.2 Environmental Services Department Goals	D-3
3.0 DEPARTMENTAL POLLUTION PREVENTION OBJECTIVES	D-4
3.1 Leadership & Commitment	D-4
3.2 Communication & Training	D-5
3.3 Department Recycling Program	D-6
3.4 Material Reuse	D-6
3.5 Waste Reduction	D-7
3.6 Energy Reduction	D-8
3.7 Water Conservation	D-8

1.0 INTRODUCTION

This document outlines the Environmental Services Department's strategy to incorporate pollution prevention into its operations and responsibilities. The Environmental Services Department (ESD) Pollution Prevention (P²) Action Plan was developed by ESD staff as part of the Region's Comprehensive Municipal Pollution Prevention (CMPP) Project.

1.1 Comprehensive Municipal Pollution Prevention Project (CMPP)

In November 1993, the Regional Municipality of Hamilton-Wentworth Region embarked on a unique project to develop an action plan to incorporate resource conservation and waste reduction into the Region's responsibilities and daily activities. Known as the Comprehensive Municipal Pollution Prevention (CMPP) Project, it switches focus from traditional approaches of treating environmental problems after they have occurred to eliminating or reducing the impacts by addressing the causes at the source. A generic template, based on the Region's experiences, will also be developed for use by other municipalities. The project is jointly funded by the Region, Environment Canada, and the Ministry of Environment and Energy.

The development of the Regional CMPP Action Plan was approached by taking a detailed look at a single department while at the same time gathering general information about all Regional operations, policies, and by-laws. It was not possible to move forward in all departments simultaneously given the available resources, time required to develop assessment tools and methods, relative independence of Regional departments, and the size of the organization (18 administrative units and approximately 3500 full and part time employees). The Environmental Services Department (ESD) was selected as the pilot department because of its diverse types of work, staff familiarity with environmental issues, and relatively receptive audience since the project had been initiated by this department.

1.2 Action Plan Development

The following steps were followed in the development of the ESD P² Action Plan:

1. Recognized need to reduce/eliminate Pollution generated through ESD operations (1993)
2. Obtained Management Commitment to proceed with Plan Development (1993)
3. Established a Departmental P2 Team: (August 1995)
 - defined team purpose, objectives, and roles of members¹
 - request to all Divisions to designate member and alternate(s)
 - training provided to members at meetings (viewed training video) and at training workshops
 - Meeting dates Aug 21, Sept 8, 22, Oct 6, 20, 27, Nov 3

4. Assessed Operations (Summers 1994, 1995)
 - Inventories to quantifying types and quantities of resources used and wastes generated, document present practices and procedures, and identify existing conservation and reduction activities were conducted by CMPP Project staff during the summers of 1994 and 1995. Areas of interest included solid wastes, hazardous materials, energy and water use, procurement, transportation, and air emissions. Inventory methodologies² were customized to fit with municipal activities.
5. Establish P² Vision, Goals & Objectives (Initiated August 1995)
 - Departmental Vision statement developed by team and approved by management (Sept 13/95)
 - review audit data and establish specific work location/division objectives to attain goals
6. Select Pollution Prevention Opportunities (Initiated September 1995 - in progress)
 - re-examine audit information
 - prioritize areas of concern/opportunity and prioritize specific wastes/emissions
 - generate P2 opportunities - sources were consultants³, CMPP staff⁴ and consultation with departmental staff (staff meetings, inviting ideas, e-mail)
 - opportunities were researched and screened by the ESD P2 Team in consultation with departmental staff. Screening and selection criteria were proposed by the consultant and approved by management (Sept 13th). An evaluation matrix to get staff feedback on proposed opportunities was developed by P2 Team member R. Gonzalez as an additional tool. Staff ratings served to establish expected response to proposed ideas and timeframes for implementation.
 - plan approved by department management (approval by appropriate level of management)
7. Develop a Monitoring Program (under development)
 - determine appropriate baseline information
 - identify appropriate indicators to measure progress of specified goals/objectives
 - develop monitoring protocol

1.3 Department Profile

The Environmental Services Department employs approximately 185 staff and has responsibilities which include: programming, planning and maintenance of the Regional water distribution and wastewater collection systems, as well as the storm water collection system for the City of Hamilton; contracted operation of the water and wastewater treatment facilities; waste management facilities and 3Rs programs; management of the Regional fleet and operation of the Regional Laboratories. The 1994 annual operating budget was \$92 million and the five year Capital budget is \$270 million.

The Environmental Services Department consists of four divisions: Laboratory Services, Finance & Administration, Waste Management, and Infrastructure Operations.

2.0 THE ACTION PLAN

2.1 Pollution Prevention Vision Statement

The Environmental Services Department will continually strive to minimize its impacts on the environment through actions that whenever possible eliminate wastes (material, energy, money, time, resources) at the source.

2.2 Environmental Services Department Goals

Regional staff in the Environmental Services Department (ESD) are personally taking the responsibility to incorporate pollution prevention concepts into every aspect of their daily activities. Participation at all levels of the Department will be encouraged as individuals Work Locations establish, maintain and monitor pollution prevention actions plans which will outline specific activities addressing the following four key areas of environmental impact:

WASTE WATER ENERGY AIR EMISSIONS

In order to effectively develop these action plans, the Environmental Service Department has established the following Departmental Pollution Prevention Goals:

- REDUCE the Generation of Solid Waste
- REDUCE the Quantity of Hazardous Waste
- REDUCE the Quantity of Energy Used
- REDUCE the Quantity of Water Used
- REDUCE the Emission of Greenhouse Gases, Acid Forming Gases and Other Negative Air Emissions

Using these goals, individual Work Locations can address issues such as transportation and procurement practices by developing specific objectives and subsequent action plans which focus on each of the noted areas. In turn, by adhering to and implementing the principles of pollution prevention the Environmental Services Department can continue to serve the community in an effective manner while providing environmental leadership and support in the development of a sustainable community.

3.0 DEPARTMENTAL POLLUTION PREVENTION OBJECTIVES

The ESD P2 Team identified objectives and programs which could be implemented at all divisions / works location within Environmental Services Department. The Departmental objectives are divided into seven areas of opportunities: Leadership & Commitment, Communication & Training, Recycling Program, Material Reuse, Waste Reduction, Energy Reduction and Water Conservation.

3.1 Leadership & Commitment

OPPORTUNITY	WHO	WHEN	HOW	TARGET/ GOAL
Convene regular Pollution Prevention Team Meetings	P2 Team Members Management	Ongoing	-through network, facilitate implementation of P2 measures. -prepare annual report on progress.	Up to 10 meetings. Members to contribute equivalent of 1 day/month and Team Leader 2 days/month.
Develop and implement a monitoring program.	P2 Team	Dec/95	-identify appropriate indicators. -develop mechanisms to collect and report on information.	
Establish method to regularly update audit information.				
Develop specific Pollution Prevention action plans for each division/work location.	Division staff ESD P2 Team	Ongoing	Finance & Administration, Laboratories, Waste Management Divisions and Infrastructure planning Section in progress. Planning for other Infrastructure Operations sections (Maintenance Management, Infrastructure Maintenance, and Fleet Services) to be initiated in January 1996.	

3.2 Communication & Training

OPPORTUNITY	WHO	WHEN	HOW	TARGET/ GOAL
Add Pollution Prevention to Job Description/Posting	J. Halliday Sr. Staff	Nov/95	Develop statement at Dec. Sr. Staff meeting Request H.R. to make additions Future job postings will include this statement	All ESD Job Descriptions will include P2 Section
Pollution Prevention and Vision 2020 Information included in ESD Employee Handbook	CMPP Staff T. Briatico	Jan/96	CMPP staff prepare section and provide to T. Briatico T. Briatico to ensure section is implemented and all Handbooks are updated	ESD Employee Handbooks will be updated to include the P2 Section by February 1996
Develop & Implement a Communications Strategy	P2 Team	Dec/95	Develop communication initiatives, such as poster contests for employee's children, posters, reporting on results, etc. as required.	
Develop Employee Training Strategy	ESD Senior Staff	Nov/95	Decide on approach to Training of Regional employees at the Nov. Senior Staff Meeting Training modifications by <date> Begin scheduling for voluntary training November 1995.	100% of ESD employees will receive P2 Training by Dec. 1996
Pollution Prevention Page in the Green Team	ESD P2 Team	Dec/95	Obtain editor's and Management approval (completed) Team to coordinate articles and submit to editor	Pollution Prevention Page will be annual component of the Green Team
Revive/Rejuvenate Regional Employee Suggestion Program	B. Hummell B. Goodger	Nov/95	Review existing program Find volunteers from team Develop communications strategy by <date> Re-launch/promote program <date>	Report on the number of suggestions and those awarded/implemented in the Green Team

3.3 Department Recycling Program

OPPORTUNITY	WHO	WHEN	HOW	TARGET/GOAL
Develop & Implement: Recycling Program at each Work Locations within Environmental Services Department	CMPP Staff ESD P2 Team Work Location or Division staff	Dec/95	ESD P2 Team will outline material to be recycled by the Department. Ensure that the programs for each work location will obtain maximum capture of material. Implementation approaches are detailed in work location/division objectives.	Decrease the amount of residual waste by ??? kg by 19??

3.4 Material Reuse

OPPORTUNITY	WHO	WHEN	HOW	TARGET/GOAL
Each Work Location will develop programs to reuse Office Supplies. Work Locations will outline programs to reuse: 1. Fine paper; generate note pads 2. Fine paper; reuse for printing draft documents 3. File folders, File hangers & Envelopes	ESD P2 Team & Work Location/ Division Reps (Outlined in Section 4.0. Specific to ES Locations)	Jan/ 96	Reuse opportunities will be outlined by the ESD P2 Team. Individual Work Locations/Divisions will develop programs to implement the opportunity. Outlined in Work Location Objectives.	Decrease Purchase of: - Note Pads by ??% - File Folders by ??% - File Hangers by ??% - Envelopes by ??%

3.5 Waste Reduction

OPPORTUNITY	WHO	WHEN	HOW	TARGET/ GOAL
Increased use of E-Mail	Sr. Staff & Information Systems ESD P2 Team	Jan/96	Procedure to be developed by Sr. Management Employees to be trained in the operation of the E-Mail software	
Electronic Transfer of Documents; Increase use of Corporate Network	Sr. Staff & Information Systems ESD P2 Team	Jan/96	Procedure for the transfer of documents and reports using the Network. Employees to be informed of the procedure and encourage to use the Network	
Centralize Telephone Books: Reduce the # per office.	Sr. Staff	Jan/96	Work location to determine # of copies required by their area. Distribution will be limited. Employees to be informed of the policy & location of centralized copy	
Eliminate Fax Cover Pages	Sr. Staff ESD P2 Team CMPP Staff	Jan/96	ESD P2 Team will review alternatives. Recommended Policy will be reviewed and approved by Sr. Staff. The alternative procedure will be implemented at work locations this will require informing Staff	
Mandate Double Sided Copy Policy	Sr. Staff ESD P2 Team CMPP Staff	Jan/96	Policy to be mandated by Sr. Management. Employees to be informed of the policy Each work location will inform staff and offer training into proper use of photocopier	
Environmental Services Divisions/Work Locations will conduct a review of their purchasing procedures and policies. Each area will investigate the opportunity to include the following items within their purchasing policies: 1. Recycled content 2. Packaging Content 3. Reuse of Product	Outlined in individual Work Location Plans	Jan/96	Work Locations initiatives are outlined in a separate report.	

3.6 Energy Reduction

OPPORTUNITY	WHO	WHEN	HOW	TARGET/ GOAL
Environmental Services Divisions/Work Locations will Conduct a Review into Energy Reduction opportunities at their Locations and Implement Energy Reduction Initiatives.	Outlined in individual Work Location Plans	Jan/96	Work locations will use the Environmental Inventory Reports conducted by Pal-Tech and CMPP Staff to initiate the process. Each work location will review the cost and feasibility of opportunities recommended within the Reports. Work Locations initiatives are outlined in a separate report.	

3.7 Water Conservation

OPPORTUNITY	WHO	WHEN	HOW	TARGET/ GOAL
Environmental Services Divisions/Work Locations will Conduct a Review into Water Conservation Opportunities at their Locations and Implement Water Conservation Initiatives.	Outlined in individual Work Location Plans	Jan/96	Work locations will use the Environmental Inventory Reports conducted by Pal-Tech and CMPP Staff to initiate the process. Each work location will review the cost and feasibility of opportunities recommended within the Reports. Work Locations initiatives are outlined in a separate report.	

References:

1. Terms of Reference for Environmental Services Department Pollution Prevention Team, August 1995.
2. Pollution Prevention Inventory Methodologies for Solid Waste, Hazardous Materials, Energy & Water, 1994-1995, CMPP Project.
3. Summary of Pollution Prevention Findings & Opportunities for Park Place, Victoria Yard, and Regional Laboratory, PAL-TECH ENGINEERING INC., September 1995.
4. Park Place Pollution Prevention Strategy, CMPP Project, September 1995.

APPENDIX E - *SOURCES* NEWSLETTER

Sources newsletter is a bi-annual publication of the Region's Pollution Prevention Working Group. Its purpose is to provide a forum for municipal employees to share information about pollution prevention. The sample in this Appendix was the first edition of *Sources*.

Efforts are taken to minimize the number of copies as explained in the article on page 4 of the newsletter "So Isn't This Newsletter Just More Pollution". A "circulate to" area was added to the newsletter to make sharing copies easier. Staff were asked to return extra copies of the first edition and this information was recorded to determine printing needs for the next issue. As a result, the number of copies of the second issue were reduced by approximately 15% from the first printing.

The newsletter was published using Microsoft Publisher and was printed in house.



Sources

Circulate to:

☐ File for Reference

Pollution Prevention News in the Regional Municipality of Hamilton-Wentworth Vol 1, Issue 1, Winter 1996

Message From the CAO

Welcome to the first issue of *Sources*, Hamilton-Wentworth's new pollution prevention newsletter.

You may have already heard about our groundbreaking Comprehensive Municipal Pollution Prevention (CMPP) Project. The CMPP Project is looking at everything we do in each department - from the goods and services we buy, our energy and water use, the waste we generate, to the by-laws, policies and procedures we have in place - to see how pollution can be prevented.

The CMPP Project is the first of its kind in Canada, and is another example of the Region's leadership role in linking our business practices with our commitment to protect the environment.

In many ways, the CMPP Project is about pinpointing sources - areas where we can do things a little differently to prevent pollution and better protect the environment, while being more efficient and reducing costs. *Sources* will keep you up to date on our progress.

Participate in this important project! You can get involved by

sharing your pollution prevention ideas and suggestions with members of the Pollution Prevention Working Group or CMPP Project staff. You can also take part in a future pollution prevention training session.

Watch *Sources* for more details on how you can participate.

Working together, we can make pollution prevention an important part of the way we do business in Hamilton-Wentworth, our sustainable community.

Yours truly,

W. Michael Fenn,
Chief Administrative Officer

Pollution Prevention (P2) - What is it?

Pollution Prevention is taking **action** at the source to reduce or eliminate the creation of waste in all its forms - material, energy, water, and air emissions. Actions include changes to processes, practices, materials, products, or energy and water use. Examples of actions being taken in Regional departments are featured on page 3 of this newsletter.

Pollution Prevention is proactive, not reactive, giving highest priority to eliminating the cause of the problem rather than just treating the symptoms.

About the Logo

The CMPP Project logo combines a stylized Regional logo and the three main elements of the natural environment - air, land, and water. These components form an umbrella, symbolizing the important role of pollution prevention in environmental protection.



Inside This Issue

Plans to reduce paper use
Pollution Prevention in Action
Who's on the Team, Tips

page 2
page 3
page 4

Teamwork in Action

Reducing Paper Use

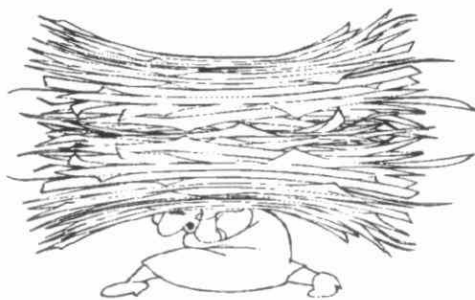
Although we've made some progress in reducing the amount of paper used, the P2 Working Group decided that there was still room for improvement when finding that the Region uses over 10 million pieces of paper each year! In developing an action plan to cut down on paper use across the Region, the group is looking at how to increase awareness about available options and ways departments can work together.

Steps:

1. Identify Opportunities
2. Get input from departments
3. Action Plan (what, who, how, when, and where)
4. Present Plan for Approval
5. Final Adjustments
6. Implementation

Opportunities:

Copying, printing, Fax Use, Electronic Communications, Computer Use, Record Keeping, Filing, tendering and purchasing.

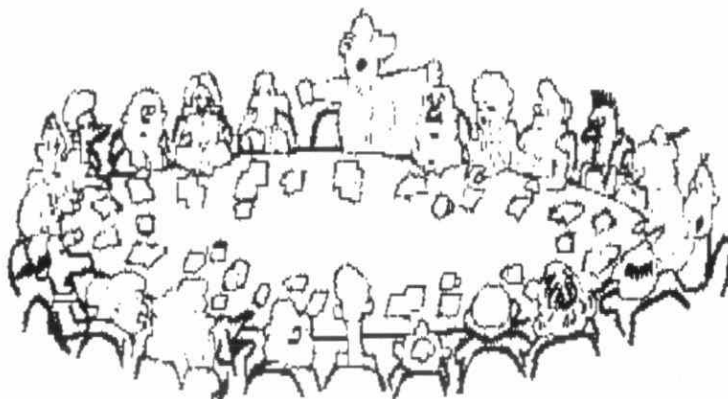


Did you know that the Region uses over 10 million pieces of paper every year?

One of the best ways to activate pollution prevention and make it part of our daily business is to involve staff who will be responsible for making the changes.

Teamwork is the theme of the Pollution Prevention (P2) Working Group, which includes members from various departments. The P2 Working Group is looking at actions that can be taken in all departments to prevent pollution.

Macassa Lodge and Environmental Services Department have also established teams that have successfully developed pollution prevention action plans for their work areas.



Benefits of Pollution Prevention for the Region:

- ☐ A cleaner healthier environment for the community;
- ☐ Cost savings - its the cheapest way to protect the environment. Costs can also be reduced through increased efficiency and savings on waste disposal and materials costs;
- ☐ Improves the image of government as a leader in environment protection;
- ☐ Helps exceed environmental regulations; and
- ☐ Stimulates the local economy and encourages the development of new technology.

C M P P Project Goals

- ☐ Lead by example, making sure the Region's own house is in order.
- ☐ Encourage local residents, communities and businesses to practise pollution prevention, through leadership and the Region's ability to regulate certain activities.
- ☐ Share project results with other communities.

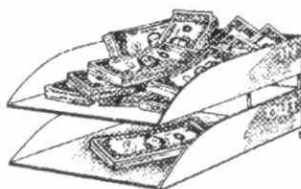
Pollution Prevention - It Can and Is Being Done !

Finance Moves to Reduce Paper Consumption:

The Finance Department reduced format of financial reports from 8.5 x 14 computer print outs to 8.5 x 11 double sided formats.

Results:

The department has reduced paper use by 35% and is looking to go further by exploring on-line viewing of the financial reports. Users could view their reports on line and possibly eliminate printing.



Purchasing:

Purchasing policies and practices help reduce product and packaging waste, encourage alternatives to hazardous products, and influence suppliers to practise pollution prevention. Each year, the Region spends over \$120 million on goods and services and deals with 10,000-15,000 suppliers. Environmental Services Department purchased 6,000 backyard composters in 1995 that came without packaging and contained 50% recycled plastic by specifying these conditions in the tender. Even with these requirements, prices have continued to drop and the latest bids were lower than previous years.

Paper or Cloth?

HSR staff were skeptical at first...

It seems that both are still needed in staff or public washrooms, but if you give people the choice, will they use cloth? Here's the experience of one Regional department.

The administrative offices of the Hamilton Street Railway (HSR) on Wentworth Street North introduced rolls of cloth towels in their washrooms in August 1995. John Howcroft, Manager of Purchasing, said that he was skeptical that cloth towels would really reduce their waste. It wasn't practical to completely eliminate paper towels and it was expected that people would prefer paper towels if given a choice. HSR decided to try it out since the cost of the cloth towels, including laundering, was cheaper than paper. There was nothing to lose.

John was pleasantly surprised with the results - 40% less paper towels were used in the first month and these savings have continued. This shows that many staff will choose the option with environmental benefits. HSR expanded the use of cloth towels to the garage area in January 1996.

Info Systems Pitching In:

E-mail Communications are on the rise in the Region with most locations now on the corporate network. Information Systems is working toward a common e-mail



package and adding bulletin board features to reduce paper use and increase speed of communications. Michael Fenn, C.A.O., said "I view e-mail as the best way to deal with issues quickly and to involve a wider range of people in decision making. I am pleased to see that there is a resource conservation benefit too!"

Benefits of Using Cloth Towels

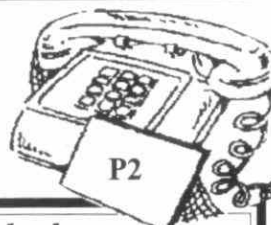
Environment: Saves trees, space in the landfill,

Resources: Use of paper towels reduced by 40% to 7 cases per month from 17.3. Cloth towels are reused many times. Staff time reduced to handle and dispose of waste paper towels.

Costs: Annual savings of \$2,115 on paper towel purchases. Reduced waste removal and disposal costs.

How are you saving money and helping the environment? Send your success stories to: Your Dept. Rep (see page 4 for members list) or a member of the Newsletter Team. Story Deadline: July 31, 1996

POLLUTION PREVENTION WORKING GROUP



P₂ Tips for Work & Home

- ⇒ Replace potentially hazardous products with less hazardous alternatives (eg. use a mixture of vinegar and water to clean windows instead of ammonia cleaners).
- ⇒ Use water and energy saving devices (eg. light timers, shower heads, toilet dams)
- ⇒ Don't buy disposables, throw away or over packaged products.
- ⇒ Recycle and reuse as many materials as possible.
- ⇒ Compost organic kitchen and yard waste.
- ⇒ Avoid using pesticides and herbicides for lawns and gardens (plant garlic/onions between vegetables to repel certain insects).
- ⇒ Become involved with community environmental initiatives (clean up days, tree planting programs).



DO YOU LUG A MUG?
Using a travel mug for coffee at work can SAVE you about \$24 per year (assuming you buy 2 coffees a day - coffee is usually about 5¢ cheaper if you use your own cup) and prevent about 500 paper or styrofoam cups from going to landfill.

<i>Name</i>	<i>Department</i>	<i>Telephone</i>
John Ames	Planning	546-2585
Debbie Edwards	Legal Services	546-2628
Beth Goodger	Environmental Services	546-2427
Rick Guyatt	Regional Facilities	546-4209
Gayle Hampson	Information Systems	546-2792
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Pam Hubbard	Roads	546-2388
Phil Jensen	Environmental Services	546-4436
Teresa Misale	Roads	546-2822
Veronika Kozelj	Health	546-3570
Lisa Weirauch	Clerks	546-2149
Brian Perro	Police	546-4735
Chris Rendell	Purchasing	546-2793
Valan Sarjeant	Human Resources	546-2396
Deborah Abbott	Economic Development	546-2359

Sources

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P2 Hotline: 546-2405

*Printed on
Recycled Paper*

So Isn't this Newsletter Just More Pollution ?

We hope not. While we realize that printed newsletters may be seen as being contrary to the goals of pollution prevention, they are also an effective way of reaching people - especially those who don't use computers.

So until we are all fully "on-line" (or become telepathic), please bear with us. To cut down on the paper we are printing one copy for every two employees. Send back any extras and let us know how many you need for next time. By the way, this newsletter is recyclable!